EXPLORING THE EFFECT OF ADVERSE CHILDHOOD EXPERIENCE ON DISTRESS TOLERANCE, COGNITIVE FLEXIBILITY AND EMOTION REGULATION AMONG YOUNG ADULTS

This dissertation is submitted for the partial fulfilment for the degree of
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CERTIFICATE

This is to certify that the dissertation entitled "Exploring the effect of adverse childhood experience on distress tolerance, cognitive flexibility and emotion regulation among young adults", submitted by Riddhi Chatterjee, a 2nd year M.Sc. student in Applied Psychology (clinical specialization), Sister Nivedita University, is as Bonafide work, which may be placed before the board of examiners for their evaluation. This is in partial fulfilment for the degree of M.Sc. in applied psychology (clinical specialization), Sister Nivedita University.

This is an original study done by the candidate and has not been submitted by her before any form for any other degree of this university or any other university.

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PLAGIARISM CERTIFICATE

"I, RIDDHI CHATTERJEE, hereby declare that the research work titled "Exploring the effect of adverse childhood experience on distress tolerance, cognitive flexibility and emotion regulation among young adults", conducted by me, has been conducted with full honesty and integrity. I confirm that the work is original, and all sources of information have been appropriately acknowledged and cited. I take full responsibility for the content and findings present in this research."

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ABSTRACT:

The present study aims to explore the effect of some significant childhood adverse experience on distress tolerance, cognitive flexibility and emotion regulation among adults. Tools used in the study are, Childhood Trauma Questionnaire–Short Form (CTQ-SF) by Bernstein D., Fink L. (1998) for identifying the presence of any significant adverse childhood experience, General Health Questionnaire (GHQ-28) by Goldberg and Hillier (1979) as a screening tool to identify individuals with potential psychological disorders, Distress tolerance scale by Simons and Gaher, 2005 to identify the level of stress tolerance of the participants, Cognitive flexibility scale by M.M Maartin and R.B. Rubin (1995) to identify the cognitive flexibility of the participants, Emotion regulation scale by Gross, J.J., & John, O.P. (2003) to measure the emotion regulation that is both reappraisal and suppression of the participants. With the help of purposive sampling total 80 data was used during this research; among which, 20 has physical neglect, 20 has emotional abuse, 20 has emotional neglect and 20 has sexual abuse history. Statistical analysis of the data was done with the help of statistical package for social sciences, window version 16 (SPSS16). As it represents relatively small sample size, hence, non-parametric statistics Kruskal Wallis test was done, at 0.05 level as critical value. The obtained result revealed that there is some effect of some significant childhood adverse experience (physical neglect, emotional neglect, emotional abuse, sexual abuse) on distress tolerance and emotion regulation (reappraisal and suppression). It also revealed that, individuals suffering from abuse (both emotional and sexual) have a higher tolerance of distress, than individuals suffering from neglect (physical or emotional) and also individuals having emotional abuse in childhood tend to suppress their emotions rather than expressing it or reapproaching the situation. They try to hide the outward display of their feelings.

KEYWORDS: *Childhood trauma, Sexual abuse, Emotional abuse, Emotional neglect, Physical neglect, Distress tolerance, Cognitive flexibility, Emotion regulation.*

INTRODUCTION

Childhood is often perceived as a time of innocence and joy, but for many children, it can also be marked by traumatic experiences that have long-lasting effects. Childhood trauma refers to any experience that leaves a deep and lasting emotional scar on a child's psyche. It can stem from a variety of sources including abuse, neglect, witnessing violence, accidents, natural disasters, and more.

Childhood trauma is often described as serious adverse childhood experiences. Children may go through a range of experiences that classify as psychological trauma; including neglect, abandonment, sexual abuse, emotional abuse, and physical abuse. These events can have profound psychological, physiological, and sociological impacts leading to lasting negative effects on health and well-being. According to **World Health Organization (WHO**), "Child maltreatment is the abuse and neglect that occurs to children under 18 years of age. It includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power." Child maltreatment is a global problem with serious life-long consequences. In spite of recent national surveys in several low- and middle-income countries, data from many countries are still lacking.

International studies reveal that 6 in 10 children under 5 years of age regularly suffer physical punishment and/or psychological violence at the hands of parents and caregivers, and 1 in 5 women and 1 in 7 men report having been sexually abused as a child.

Every year, there are an estimated 40 to 150 homicide deaths in children under 18 years of age, some of which are likely due to child maltreatment. This number almost certainly underestimates the true extent of the problem, since a significant proportion of deaths due to child maltreatment are incorrectly attributed to falls, burns, drowning and other causes.

The National Institute of Mental Health (USA) defines childhood trauma as:

"The experience of an event by a child that is emotionally painful or distressful, which often results in lasting mental and physical effects."

Childhood trauma can also occur when a child witnesses overwhelming negative events in childhood. These can occur in relationships such as with abuse, assault, neglect, violence, exploitation or bullying. This is known as interpersonal trauma – trauma that happens between people. Children can also experience traumatic events which include accidents, natural

disasters, war and civil unrest, medical procedures, or the sudden loss of a parent or caregiver through death, divorce, force adoption, separation or imprisonment.

Traumatic experiences can set in motion a cascade of changes in children's lives that can be challenging and difficult. These can include changes in where they live, where they attend school, who they're living with, and their daily routines. Traumatic experiences leave a legacy of reminders that may persist for years. These reminders are linked to aspects of the traumatic experience, its circumstances, as well as its aftermath. Children may be reminded by persons, places, things, situations, anniversaries, or by feelings such as renewed fear or sadness. Physical reactions can also serve as reminders, for example, increased heart rate or bodily sensations. Trauma and loss reminders can reverberate within families, among friends, in schools, and across communities in ways that can powerfully influence the ability of children, families, and communities to recover. Addressing trauma and loss reminders is critical to enhancing ongoing adjustment.

Hence, childhood trauma refers to deeply distressing or disturbing events experienced during childhood that leave a lasting impact on a person's emotional, psychological, and physical well-being. These traumatic experiences can range from abuse and neglect to the loss of a caregiver, witnessing violence, or living in an environment of chronic stress. Such events often disrupt the child's sense of safety, security, and trust, which can profoundly affect their development and influence how they interact with the world later in life.

Sign and symptoms of childhood trauma include:

The signs and symptoms of childhood trauma can vary widely depending on the nature of the trauma, the child's age, and their individual coping mechanisms. These symptoms can manifest in emotional, behavioural, physical, and cognitive ways. It's important to note that the effects of childhood trauma may not always be immediately apparent, and some symptoms may emerge later in life.

Here are some common signs and symptoms of childhood trauma:

Emotional Symptoms:

- Anxiety which can be manifested by, constant worry, fearfulness, or feeling unsafe.
- Depression manifested by persistent sadness, hopelessness, or low mood.
- Mood Swings that is extreme emotional fluctuations, difficulty regulating emotions.

- Irritability or becoming easily upset, angry, or frustrated.
- Feelings of Guilt or Shame, that is a sense of self-blame or believing they are responsible for the trauma.
- Emotional Numbness or lack of emotional expression or detachment from feelings.

Behavioural Symptoms:

- Aggression or Violence that is outbursts of anger or violent behaviour, often as a way to cope with distress.
- Difficulty Trusting Others or struggling to form close relationships or trusting authority figures.
- Withdrawal or Isolation that can be manifested by avoiding social interactions, retreating from friends, family, or activities.
- Self-Harm or engaging in harmful behaviours like cutting or burning as a means of coping.
- Risk-Taking Behaviours including engaging in dangerous activities, substance abuse, or self-destructive actions.
- Regression or reverting to earlier stages of behaviour, such as bedwetting or thumb-sucking (common in younger children).

Physical Symptoms:

- Sleep Problems that include insomnia, nightmares, or difficulty falling and staying asleep.
- Chronic Pain or Fatigue manifested by unexplained aches, pains, or feeling constantly tired.
- Somatic Complaints including frequent headaches, stomach-aches, or other physical symptoms without clear medical cause.
- Hypervigilance or being constantly on edge or easily startled by loud noises or unexpected events.

Cognitive Symptoms:

- Difficulty Concentrating or trouble focusing on tasks or maintaining attention in school or daily activities.
- Memory Problems manifested by difficulty recalling certain events or information.
- Intrusive Thoughts or Flashbacks
- Confusion or Disorientation which is manifested by feeling "spaced out" or disconnected from reality.
- Developmental and Social Symptoms (in younger children):
- Problems with Attachment or difficulty forming secure, trusting bonds with caregivers or others.
- Fear of Abandonment, that is extreme anxiety or distress over the possibility of losing a caregiver.
- Long-Term Symptoms (that may develop later in life) including Post-Traumatic Stress Disorder (PTSD), Depression and Anxiety Disorders, Substance Abuse or using drugs or alcohol as a way to numb or cope with painful memories or emotions.
- Relationship Issues manifested by difficulty trusting others, forming intimate relationships, or maintaining healthy boundaries.

Effect of childhood trauma:

The effects of childhood trauma can be profound and long-lasting, impacting various aspects of a person's emotional, psychological, and physical well-being. Trauma experienced in childhood can shape how individuals view themselves, others, and the world around them, potentially leading to difficulties throughout their lives. The extent and nature of the effects depend on factors such as the type of trauma, the duration of the experience, the child's age at the time, and the support they received during and after the trauma.

1. **Emotional and Psychological Effects:**

- Anxiety and Panic Disorders that include individuals who experienced childhood trauma often have heightened feelings of fear and worry, leading to anxiety disorders, panic attacks, or constant vigilance.

- Depression that is manifested by persistent sadness, hopelessness, or a loss of interest in life can result from childhood trauma, especially if the trauma was not addressed or processed.
- Low Self-Esteem or children who experience neglect, abuse, or rejection often develop poor self-worth and struggle with feelings of shame, guilt, or unworthiness.
- Childhood trauma can lead to attachment issues and make it challenging to form healthy, trusting relationships in adulthood.
- Children who have undergone trauma may struggle to manage emotions, leading to outbursts, mood swings, and difficulty coping with stress.

2. Behavioural Effects:

- Risky Behaviours which include adults with a history of childhood trauma may engage in substance abuse, self-harm, or other risk-taking behaviors as coping mechanisms to deal with unresolved pain.
- Children who experience trauma, especially physical or emotional abuse, may display aggression toward others as a way to express their anger or frustration.
- Some individuals may avoid social interactions, retreating from relationships or public activities due to feelings of distrust or insecurity.
- Those who have experienced neglect or abuse may struggle with authority figures, feeling a lack of control or fearing further harm.

3. Cognitive and Developmental Effects:

- Trauma can interfere with cognitive development, leading to difficulties in memory, concentration, and learning. Children may struggle to perform well in school due to these issues.
- Trauma can affect a person’s ability to make sound decisions, often leading to impulsive choices or a sense of being "stuck" in life. It severely effects one’s decision-making ability.
- Children who experience trauma may have difficulty understanding or expressing emotions, which can impact their emotional intelligence as adults.

4. Physical Health Effects:

- Childhood trauma can contribute to long-term health issues, such as heart disease, diabetes, and chronic pain. The prolonged stress from trauma affects the body's immune system and hormone regulation.
- Sleep Disturbances including nightmares, insomnia, or difficulty falling asleep are common issues in individuals who have experienced childhood trauma.
- Physical manifestations of trauma, such as headaches, stomach-aches, and unexplained pain, can occur, especially when emotional issues are repressed or unaddressed.
- Childhood trauma can cause a dysregulated stress response system, making the individual more vulnerable to anxiety, panic, and heightened stress reactions in adulthood.

5. Social and Relational Effects:

- People who experienced childhood trauma may struggle to form or maintain healthy relationships due to fear of abandonment, low self-esteem, or difficulty trusting others.
- Traumatized children may develop insecure attachment styles, which can lead to challenges in bonding with caregivers or significant others later in life.
- Adults who experienced childhood trauma may have difficulty providing nurturing care to their own children, as they may not have learned healthy caregiving behaviors themselves.

6. Long-Term Behavioral Patterns:

- Without intervention, individuals who were abused or neglected as children may unknowingly perpetuate similar behaviors in their own families or relationships.
- To cope with the pain, individuals may avoid situations, memories, or even people that remind them of their traumatic experiences, which can limit their growth and personal development.

Childhood trauma can have significant effects on cognition, influencing various cognitive functions such as executive functioning, emotion regulation, distress tolerance, impulse control, memory, attention, learning, and problem-solving and many more. Here we are talking about **executive functioning, emotion regulation, distress tolerance, impulse control**. The

impact of trauma on cognition can be both direct and indirect, often depending on the severity and duration of the trauma, as well as the child's support system and resilience factors.

TYPES OF CHILDHOOD TRAUMA:

Childhood trauma encompasses deeply distressing experiences that disrupt a child's sense of safety and stability. These events can shape a child's emotional, cognitive, and social development, leading to long-term effects. Below is of various types of childhood trauma:

1. Abuse

Abuse involves deliberate harm to a child and can be physical, emotional, or sexual.

Physical Abuse

Involves hitting, slapping, burning, choking, or any physical harm which can lead to bruises, fractures, internal injuries, and long-term physical pain. Psychological effects include fear, hypervigilance, aggression, or difficulty trusting others.

Emotional/Psychological Abuse

Includes verbal insults, humiliation, gaslighting, intimidation, and excessive criticism. Children may develop low self-esteem, anxiety, depression, or struggle with emotional regulation. Chronic emotional abuse can make children feel worthless, unlovable, or deeply insecure.

Sexual Abuse

Any form of sexual contact or exposure a child is not old enough to understand or consent to, which can involve molestation, rape, forcing a child to watch pornography, or coercion into sexual acts. Leads to extreme emotional distress, shame, PTSD, difficulties with intimacy, and dissociation.

2. Neglect

Neglect is a failure to provide for a child's basic needs. It can be physical, emotional, educational, or medical.

Physical Neglect

Failing to provide adequate food, shelter, clothing, or hygiene. Children may suffer from malnutrition, poor hygiene, untreated illnesses, or developmental delays.

Emotional Neglect

When a child's emotional needs for love, affection, and validation are ignored, leading to feelings of abandonment, emotional numbness, and difficulties forming relationships.

3. Household Dysfunction

Growing up in a dysfunctional household exposes a child to stress, instability, and trauma.

Witnessing Domestic Violence

Seeing a parent or caregiver physically or verbally abuse can lead to fear, anxiety, aggressive behaviour, and normalization of violence in future relationships.

Living with a Parent with Mental Illness

A child may become a caretaker for their parent instead of being cared for, which can lead to hyper-independence, anxiety, or difficulty expressing emotions.

Substance Abuse in the Home

Parents who abuse drugs or alcohol may neglect or abuse their children. Children may experience instability, abandonment, financial struggles, and emotional neglect.

Parental Incarceration

It can lead to feelings of rejection, shame, and insecurity. Children may experience social stigma, financial instability, and difficulty forming trust.

High-Conflict Divorce or Separation

Constant fighting between parents can create an environment of stress and instability may lead to feelings of guilt, divided loyalties, and emotional distress.

4. Loss and Abandonment

Losing a primary caregiver can cause deep emotional scars in a child.

Death of a Parent or Loved One

It can trigger grief, depression, fear of abandonment, and attachment issues. Children may have nightmares, anxiety, or difficulty coping with loss.

Being Abandoned or Placed in Foster Care/Adoption

When a child goes though the feelings of rejection, instability, and a lack of belonging they may struggle with trust, self-worth, and forming lasting relationships.

5. Community and Environmental Trauma

Exposure to violence and disasters can deeply impact a child's emotional well-being.

Exposure to Violence (Gang, School, or Neighbourhood Violence)

Living in an unsafe community with crime, shootings, or gang activity leads to chronic fear, PTSD, difficulty trusting authority, and hypervigilance.

Natural Disasters (Earthquakes, Hurricanes, Fires, Floods, etc.) can create fear, loss of home, financial insecurity, and emotional instability may lead to nightmares, anxiety, and feelings of helplessness.

War, Refugee Trauma, and Terrorism

War zones or forced migration due to conflict expose children to extreme fear and instability can lead to PTSD, depression, survival guilt, and difficulty adjusting to new environments.

6. Bullying and Peer Rejection

Social trauma can have long-lasting effects on self-worth and relationships.

Persistent Bullying (Verbal, Physical, or Cyberbullying)

It can cause anxiety, depression, suicidal thoughts, and social withdrawal. Long-term effects include low self-esteem and trust issues.

Social Rejection and Loneliness

If a child is being excluded by peers can lead to emotional pain, self-doubt, and feelings of worthlessness.

It can cause chronic pain, PTSD, phobias, and emotional distress.

DISTRESS TOLERANCE:

Simons and Gaher (2005) conceptualize distress tolerance **as an individual's ability to withstand negative emotion states** (Simons & Gaher, 2005).

Distress tolerance is a person's ability to manage actual or perceived emotional distress, which involves making it through an emotional incident without making it worse. People who have low distress tolerance tend to become overwhelmed by stressful situations and sometimes turn to unhealthy or even destructive ways of coping with these difficult emotions. It is the **ability to endure emotional discomfort, stress, or crisis situations without reacting impulsively or engaging in harmful behaviours**. It's a crucial skill for managing difficult emotions and making rational decisions under pressure

SIGNIFICANCE OF DISTRESS TOLERANCE:

Distress tolerance is a fundamental skill for maintaining emotional well-being and managing life's inevitable challenges. People with high distress tolerance can handle stress without becoming overwhelmed or resorting to harmful coping mechanisms. They can make rational decisions even in difficult situations and maintain self-control when faced with emotional distress. On the other hand, individuals with low distress tolerance may experience heightened emotional reactivity, struggle with uncertainty, and engage in impulsive behaviours such as substance use, self-harm, or avoidance.

Developing distress tolerance is essential for both mental and physical health. Without it, individuals may suffer from chronic stress, anxiety, and depression, which might lead to physical symptoms such as headaches, fatigue, and digestive issues. Strengthening distress tolerance skills can enhance emotional stability, improve problem-solving abilities, and foster healthier relationships.

FACTOR INFLUENCING DISTRESS TOLERANCE

Several factors contribute to an individual's ability to tolerate distress, including childhood experiences, neurological functioning, and learned coping mechanisms.

1. **Early Life Experiences and Trauma**

   Childhood trauma, neglect, or growing up in an unstable environment can significantly impair distress tolerance. When a child is unable to cope with stress in healthy ways, they may develop avoidance behaviours or impulsive reactions to distressing situations. Adverse childhood experiences (ACEs), such as abuse or neglect, can shape the brain's response to stress, making distress feel more overwhelming in adulthood.

2. **Neurological and Biological Factors**

   The brain plays a crucial role in distress tolerance. The amygdala, which processes fear and emotions, may become overactive in individuals with low distress tolerance, making even minor stressors feel like major threats. Additionally, the prefrontal cortex, responsible for rational thinking and self-control, may be underactive, making it harder to regulate emotions. Trauma can also affect the hippocampus, which is involved in distinguishing past trauma from present experiences, causing distress reactions that feel disproportionate to the actual situation.

3. **Mental Health Conditions**

   Mental health disorders such as depression, anxiety, PTSD, and BPD are often linked to low distress tolerance. Individuals with these conditions may experience intense emotions and struggle to regulate them effectively.

Effects of Low Distress Tolerance

Low distress tolerance can have significant negative consequences on an individual's personal, social, and professional life. Some common effects include:

- **Emotional Dysregulation** that is difficulty managing emotions, leading to frequent mood swings, anxiety, and anger outbursts.
- **Impulsive Behaviour** or engaging in reckless actions such as binge eating, substance abuse, self-harm, or aggressive outbursts to escape distress.
- **Avoidance and Procrastination** or refusing to face uncomfortable emotions or situations, leading to unfulfilled responsibilities and strained relationships.
- **Chronic Stress and Health Issues** manifested by headaches, fatigue, high blood pressure, and digestive problems due to excessive stress.

CHILDHOOD TRAUMA AND DISTRESS TOLERANCE:

Childhood trauma, which includes experiences such as neglect, abuse, loss, or unstable environments, can severely impact distress tolerance, making it difficult for individuals to manage emotions effectively.

Individuals who have experienced **childhood trauma** often struggle with low distress tolerance, making it difficult for them to handle emotional distress in healthy ways.

Childhood trauma, including abuse, neglect, parental abandonment, or exposure to violence, **alters the brain's stress response system**, leading to **heightened emotional sensitivity, impulsivity, and maladaptive coping strategies**.

Childhood trauma significantly lowers **distress tolerance**, making it difficult for individuals to **cope with stress, regulate emotions, and manage adversity** in healthy ways. Trauma alters the brain, nervous system, and emotional processing, leading to **heightened emotional reactivity, impulsivity, and avoidance behaviours**. Below are the key ways in which childhood trauma lowers distress tolerance:

1. <u>Heightened Sensitivity to Stress</u>

- **Overactive Fight-or-Flight Response:** Childhood trauma conditions the brain to perceive threats everywhere, even in safe situations. The body overreacts to minor stressors, making distress feel unbearable. Example: A trauma survivor might react to criticism at work as if they are in danger, leading to panic, defensiveness, or emotional shutdown.
- **Hypervigilance and Emotional Reactivity**: Due to past trauma, individuals become hyper-aware of potential threats, even when none exist. Small frustrations trigger extreme emotional responses. This leads to quick anger, anxiety, or fear, reducing the ability to handle distress calmly.

2. <u>Impaired Emotional Regulation</u>

- **Underdeveloped Self-Soothing Skills:** Healthy distress tolerance is built in childhood through caregivers who comfort and guide a child through distressing emotions. If a child experiences neglect, emotional abuse, or abandonment, they never learn how to calm themselves down.
- **Emotional Flashbacks:** Trauma survivors experience intense emotional reactions that do not match the present situation. Their brain confuses present distress with past trauma, making small problems feel as painful as past abuse or neglect. Example: A person ignored by a friend may feel deep rejection and worthlessness because it reminds them of childhood neglect.

3. Maladaptive Coping Strategies Due to Trauma

- **Avoidance of Distress:** Trauma survivors learn to escape distress instead of facing and managing it. They may use substance abuse, overeating, social withdrawal, or procrastination to numb uncomfortable emotions.
- **Impulsivity and Self-Destructive Behaviour:** Due to low distress tolerance, individuals may react to emotional discomfort with reckless behaviours like, self-harm to distract from emotional pain, substance abuse to numb distress. Risky behaviours to escape emotional discomfort.
- **Emotional Numbing and Dissociation**: Some trauma survivors respond to distress by emotionally shutting down (hypo arousal). This makes it difficult to connect with emotions, leading to numbness, dissociation, and lack of motivation.

COGNITIVE FLEXIBILITY

According to Rubin (in collaboration with Martin, 1995), "cognitive flexibility" refers to an **individual's awareness of multiple options in a situation, coupled with a willingness to adapt and be flexible, and a sense of self-efficacy in their ability to do so**; essentially, the capacity to change one's thinking and approach when faced with new or unexpected circumstances.

Cognitive flexibility is an intrinsic property of a cognitive system often associated with the mental ability to adjust its activity and content, switch between different task rules and corresponding behavioural responses, maintain multiple concepts simultaneously and shift internal attention between them. Nowadays, cognitive flexibility can also be referred to as a set of properties of the brain that facilitate flexible yet relevant switching between functional brain states.

It is the ability to adapt one's thinking and behaviour in response to changing environments, rules, or demands. It involves shifting between different concepts, perspectives, or strategies and is a key component of problem-solving, creativity, and learning. Cognitive flexibility allows individuals to switch between tasks, adjust to new situations, and consider multiple viewpoints.

SIGNIFICANCE OF COGNITIVE FLEXIBILITY:

Cognitive flexibility is one of the most important skills for success in life, learning, and relationships. It allows you to adapt, think creatively, and handle change without feeling overwhelmed. Here is few importance of cognitive flexibility:

1. Problem-Solving & Creativity:

When faced with challenges, cognitive flexibility helps one to see multiple solutions instead of getting stuck on one idea. It encourages innovation by allowing one to think outside the box and approach problems from different angles.

2. Adaptability in a Changing World

Being cognitively flexible helps one to adjust without frustration, making transitions smoother and less stressful.

3. Better Emotional Regulation

When things don't go as planned, people with cognitive flexibility are less likely to panic or feel stuck. They can reframe negative situations, find alternative solutions, and bounce back from setbacks faster.

4. Stronger Social Skills & Empathy

Flexibility in thinking allows one to see situations from other people's perspectives. This makes one a better listener, improves communication, and helps in conflict resolution by fostering understanding and compromise.

5. Encourages a Growth Mindset

People with strong cognitive flexibility tend to have a growth mindset—they believe they can learn, improve, and adapt. This mindset leads to greater motivation, resilience, and long-term success.

FACTOR INFLUENCING COGNITIVE FLEXIBILITY:

Several factors influence cognitive flexibility, shaping how easily one can adapt to new situations, switch between ideas, and adjust your thinking. These factors can be biological, psychological, and environmental.

1. **Neurological and Biological Factors**

    - The prefrontal cortex plays a key role in executive functions, including cognitive flexibility. Damage or underdevelopment in this area can limit adaptability.
    - The brain's ability to rewire itself (neuroplasticity) supports cognitive flexibility. The more you challenge your brain with new experiences, the more adaptable it becomes.

2. **Psychological Factors**

    - People with a growth mindset (believing abilities can improve with effort) tend to be more cognitively flexible than those with a fixed mindset (believing intelligence and skills are static).
    - High stress can lead to rigid thinking, making it harder to switch perspectives or adjust strategies. Chronic anxiety can also create a tendency to stick to familiar routines as a coping mechanism.
    - Being open to learning and actively seeking new experiences enhances cognitive flexibility. People who enjoy problem-solving and exploring new ideas tend to be more adaptable.

3. **Environmental & Social Factors**

    - Children exposed to diverse learning environments, problem-solving activities, and different cultural perspectives tend to develop stronger cognitive flexibility.
    - Schools that emphasize creative thinking, discussion-based learning, and interdisciplinary approaches help develop cognitive flexibility.
    - Jobs that require multitasking, decision-making, or creative problem-solving (like entrepreneurship, research, or design) strengthen cognitive flexibility over time.

4. **Physical Health & Lifestyle**

    - Poor sleep impairs brain function, reducing adaptability and making it harder to switch between tasks or ideas.

- Physical activity, especially aerobic exercise, improves brain function by increasing blood flow and stimulating neuroplasticity.
- A balanced diet, rich in omega-3 fatty acids, antioxidants, and essential nutrients, supports brain health and cognitive flexibility.

EFFECT OF LOW COGNITIVE FLEXIBILITY:

Low cognitive flexibility can have a significant impact on various aspects of life, making it harder to adapt to change, solve problems, and navigate social or professional situations.

1. Struggles with Problem-Solving

People with low cognitive flexibility often get stuck on one approach to solving a problem, even if it's not working. They may struggle to see alternative solutions or new perspectives. This can lead to frustration, inefficiency, and poor decision-making.

2. Difficulty Adapting to Change

Unexpected changes, whether in work, relationships, or daily routines, can cause stress and discomfort. Rigid thinkers may resist change, preferring routine and familiarity over new opportunities which can make transitions, like career shifts or moving to a new place, especially challenging.

3. Increased Stress and Anxiety

When things don't go as planned, low cognitive flexibility can lead to overwhelming stress. The inability to shift perspectives or adjust to new situations can cause frustration and emotional distress. It can also contribute to rigid thinking patterns associated with anxiety and depression.

4. Reduced Creativity & Innovation

Creativity thrives on flexible thinking—finding new ideas, making unexpected connections, and thinking outside the box. Low cognitive flexibility can make it hard to generate fresh ideas or approach challenges in creative ways.

5. Risk of Mental Health Issues

Rigid thinking is often linked to conditions like anxiety, obsessive-compulsive tendencies, and depression. Cognitive inflexibility can make it harder to adopt healthier coping strategies for stress and emotions.

CHILDHOOD TRAUMA AND COGNITIVE FLEXIBILITY:

Childhood trauma can have a significant impact on cognitive flexibility, shaping how a person adapts to change, solves problems, and processes emotions. Trauma such as abuse, neglect, loss, or exposure to chronic stress can alter brain development, leading to difficulties in adjusting to new situations and thinking in flexible ways.

1. Changes in Brain Development

- Trauma affects the prefrontal cortex, which is responsible for executive functions like problem-solving, decision-making, and adaptability.
- The amygdala, the brain's fear centre, becomes overactive, making the person more likely to react emotionally rather than think flexibly.
- The hippocampus, which processes memory, may shrink, making it harder to learn from past experiences and apply new strategies.

2. Rigid Thinking Patterns

Many trauma survivors develop black-and-white thinking, struggling to see multiple perspectives. They may rely on predictability and control to feel safe, leading to resistance to change which can cause difficulty in learning, decision-making, and adapting to new environments.

EMOTION REGULATION

Emotions are a fundamental part of human existence, influencing thoughts, behaviours, and relationships. While emotions provide valuable information about experiences and motivations, they can sometimes become overwhelming and difficult to manage. Emotion regulation refers to a critical skill to recognize, understand, and manage emotions effectively. It impacts mental well-being, decision-making, and social interactions. Developing strong emotion regulation strategies allows individuals to respond to challenges in a balanced and constructive manner rather than reacting impulsively or being consumed by negative emotions.

According to psychologist **James Gross**, emotion regulation is the process of influencing how someone experiences and expresses their emotions. It also involves when and which emotions someone has.

It is also defined as the process by which individuals actively influence which emotions they experience as well as when they experience them, and how they express those emotions, essentially involving the monitoring, evaluation, and modification of emotional reactions to achieve desired goals.

Regulating someone's emotions occurs through utilizing skills to cope with changes in emotional experiences. Emotion regulation can occur internally or externally, with or without support from another individual. People unconsciously use emotion regulation strategies to cope with difficult situations. Some of these are healthy, some are not. Healthy coping strategies, such as managing stress with a walking program, do not cause harm. They can help to diffuse strong emotions, often allowing for a greater understanding of what led to the emotional experience.

SIGNIFICANCE OF EMOTION REGULATION:

Emotion regulation is crucial for maintaining psychological, social, and physical well-being. It helps individuals manage stress, reduce anxiety and depression, and enhance emotional stability. Proper regulation of emotions fosters healthy relationships by improving communication, empathy, and conflict resolution skills.

1. **Enhances Mental Health**: Helps reduce stress, anxiety, and depression by fostering emotional stability.
2. **Improves Decision-Making**: Prevents impulsive reactions and enables rational thinking.
3. **Strengthens Relationships:** Encourages effective communication, empathy, and conflict resolution.
4. **Supports Physical Health:** Reduces stress-related illnesses such as high blood pressure and heart disease.
5. **Encourages Personal Growth:** Promotes self-awareness, adaptability, and emotional resilience.

Additionally, it enables better decision-making by preventing impulsive reactions that may lead to regret or negative consequences. In the workplace, strong emotion regulation contributes to productivity, resilience, and the ability to handle challenges constructively. Furthermore, well-regulated emotions support overall health by reducing the risk of stress-related illnesses such as high blood pressure, heart disease, and weakened immune function.

EFFECT OF LOW EMOTION REGULATION:

Low emotion regulation, also known as emotional dysregulation, can significantly impact a person's life by leading to increased stress, anxiety, strained relationships, difficulty managing daily challenges, and can even contribute to mental health issues like depression and substance abuse.

Some negative effect of low emotion regulation include:

- **Increased Stress and Anxiety:** Difficulty managing emotions can lead to heightened stress and anxiety levels.
- **Poor Decision-Making:** Impulsivity and emotional overwhelm can result in poor choices with long-term consequences.
- **Reduced Work Performance:** Emotional instability can hinder focus, productivity, and workplace relationships.
- **Higher Risk of Mental Health Issues:** Individuals with poor emotion regulation may be more prone to depression and other mental health disorders.
- **Unhealthy Coping Mechanisms:** Low regulation skills can lead to substance abuse, overeating, or avoidance behaviours as coping strategies.

CHILDHOOD TRAUMA AND EMOTION REGULATION:

Childhood trauma, such as abuse, neglect, or exposure to violence, can significantly impact emotional development and regulation. When a child experiences trauma, their brain and nervous system adapt in ways that may lead to long-term difficulties in handling emotions. Childhood trauma can significantly impact a person's ability to regulate their emotions, often leading to difficulties identifying, expressing, and managing feelings, resulting in emotional dysregulation, including heightened sensitivity to stressors, difficulty calming down, and potentially maladaptive coping mechanisms in adulthood.

1. Neurobiological Impact of Trauma on Emotion Regulation

Childhood trauma alters the development of key brain structures involved in emotional regulation.

- The Amygdala: The amygdala is responsible for detecting threats and generating emotional responses like fear and aggression. In individuals with childhood trauma, the amygdala tends to be overactive, leading to heightened emotional reactivity and difficulty calming down after experiencing distress.
- The Prefrontal Cortex: The prefrontal cortex (PFC) helps regulate emotions by assessing situations and applying reasoning. Trauma can impair the development of the PFC, leading to poor impulse control, difficulty in calming oneself, and struggles with decision-making in emotionally charged situations.
- The Hippocampus: The hippocampus plays a key role in processing emotions and distinguishing past trauma from present experiences. Trauma can lead to a shrunken or underactive hippocampus, making it difficult for individuals to differentiate between real threats and memories of past trauma.

2. Emotional and Behavioral Consequences of Childhood Trauma

- Hyperarousal & Emotional Reactivity: Individuals with childhood trauma often experience intense emotional reactions to minor stressors. They may struggle with anger outbursts, panic attacks, or extreme fear, even in situations that do not pose real danger. This can make interpersonal relationships difficult, as their emotional responses may seem unpredictable or excessive to others.
- Difficulty Identifying and Expressing Emotions: Trauma survivors often have trouble recognizing and describing their emotions. This can lead to internal distress, self-isolation, and difficulty in forming deep relationships.
- Emotional Numbness & Avoidance: Some trauma survivors cope by suppressing emotions altogether, leading to emotional detachment or dissociation. They may appear unemotional, distant, or indifferent, even when faced with situations that typically elicit strong emotional responses. Avoidance can also manifest as substance use, compulsive behaviours, or social withdrawal to escape emotional pain.

3. Social and Relational Difficulties Due to Emotion Dysregulation

- Unstable Relationships: Emotional dysregulation can lead to intense and unstable relationships, with frequent conflicts, fear of abandonment, or excessive emotional dependence. Trauma survivors may have difficulty trusting others, leading to either clinginess or avoidance in relationships.
- Fear of Rejection & Low Self-Esteem: Many trauma survivors develop deep-seated fears of abandonment and rejection. This can lead to people-pleasing behaviours or pushing others away before they get too close.
- Poor Conflict Resolution Skills: Due to an overactive amygdala and underdeveloped prefrontal cortex, trauma survivors may struggle to handle conflicts calmly. They may react aggressively, withdraw completely, or struggle to articulate their emotions during arguments.

RATIONALE OF THE STUDY:

Childhood trauma is a general public health concern that affect individuals worldwide. Having any adverse experience in childhood such as abuse, neglect in any form that can be physical or emotional or sexual; must have a significant role in long term and later life. It is also identified as the source of many mental illness such as PTSD, depression, general anxiety to trust issues, suspiciousness. Adverse childhood experience also alters individuals brain function that eventually led to brain damage and neurological health issues. These adverse outcomes can persist into adulthood, affecting individuals' overall well-being, productivity, and quality of life. Research on childhood trauma is essential to address this huge issue and understanding as well as preventing further problems.

Although there are many extensive studies on childhood trauma, several gaps remain. Not many research has focused on both cognition and emotion, despite this two being the most important pillars of behaviour. Cognition and emotion both plays a crucial role on how we behave, react to any situation. Here the research is mainly focused on the cognitive and emotional aspect of an individual that is affected by childhood trauma. Childhood trauma or any adverse childhood experience leaves a huge impact on any individual’s stress tolerance, thinking pattern, thinking flexibility and how they regulate their emotions in various situation. Both these areas play a huge role on how we overcome stress and stay functional in our daily life. By identifying and addressing those factors, can lead to meaningful improvements in public health and mental health care. This research can ensure that individual affected by adverse childhood experience receives necessary support to lead healthier and more fulfilling lives.

REVIEW OF LITERATURE

A literature review is an overview of previously published works on a particular topic. The term can refer to a full scholarly paper or a section of a scholarly work such as books or articles. Either way, a literature review provides the researcher/author and the audiences with general information of an existing knowledge of a particular topic. A good literature review has a proper research question, a proper theoretical framework, and/or a chosen research methodology. It serves to situate the current study within the body of the relevant literature and provides context for the reader. In such cases, the review usually precedes the methodology and results sections of the work.

LITERATURE REVIEW ABOUT CHILDHOOD TRAUMA:

Childhood psychological trauma seems to play a significant role in the emergence of various serious disorders during childhood and later in life. Similar to childhood rheumatic fever, psychological trauma initiates multiple problems, each of which can result in a recognizable mental condition. The author identifies four traits associated with childhood trauma that seem to persist throughout life, regardless of the diagnosis ultimately given to the patient. These traits include vividly remembered or otherwise repeatedly experienced memories of the traumatic event, recurring behaviors, fears specific to the trauma, and altered perceptions about individuals, life, and the future. She categorizes childhood trauma into two main types and outlines the findings that can help define each of these types. Type I trauma encompasses clear, detailed recollections, “omens,” and misunderstandings. Type II trauma includes denial and emotional numbness, self-hypnosis and dissociation, as well as feelings of rage. Crossover conditions frequently arise following abrupt, shocking deaths or accidents that leave children with disabilities. In such cases, traits from both type I and type II childhood traumas may coexist. There can be significant feelings of sadness. **Terr, L. C. (2003).**

Experiencing trauma during childhood is associated with depression in adulthood and may contribute to a more persistent form of depression. Nevertheless, the relationship between childhood trauma and the persistence of depression has not been explored using a substantial and representative sample that considers other aspects of depression, including severity, onset age, and any accompanying psychological conditions. Initial data, gathered between 2004 and 2007, originated from the Netherlands Study of Depression and Anxiety (NESDA). Participants had a current DSM-IV-TR diagnosis of major depressive disorder (MDD) and

were sourced from the community, primary care environments, and specialized mental health facilities (N = 1230). The connections between childhood trauma, childhood life events, and the persistence of depression were analysed using various logistic regression models. Chronic depression was defined as experiencing depression for 24 months or longer within the previous 4 years. The findings indicate that various forms of childhood trauma can be viewed as an independent factor influencing the persistence of depression. Therefore, it is crucial to identify the existence of childhood trauma when treating patients suffering from depression. **Wiersma, J. E., Hovens, J. G., van Oppen, P., Giltay, E. J., van Schaik, D. J., & Penninx, B. W. (2009)**

Childhood maltreatment (CM) has been linked to reduced executive functioning in both children and adults; however, there is relatively limited research on executive function in adolescents who have experienced CM. Nonetheless, executive dysfunction during adolescence can lead to significant negative outcomes, such as heightened susceptibility to risky behaviors and challenges in academic performance. This research examines how self-reported CM relates to an aspect of executive function, specifically cognitive flexibility, in adolescents who do not have diagnosed psychiatric disorders. The study looked at the effects of various maltreatment subtypes, including physical and emotional forms of abuse and neglect. A group of thirty adolescents aged 12 to 17 years, with an equal gender distribution, completed the retrospective self-report Childhood Trauma Questionnaire (CTQ) and participated in the Wisconsin Card Sorting Test (WCST). Correlational analyses were conducted to investigate the relationship between WCST perseverative error scores adjusted for age and education and the total scores from the CTQ. The study also explored the relationships with no perseverative errors and the physical and emotional abuse and neglect sub-scores within the CM framework. The findings imply that both physical abuse and physical neglect are related to impaired cognitive flexibility in adolescents. **Spann, M. N., Mayes, L. C., Kalmar, J. H., Guiney, J., Womer, F. Y., Pittman, B., ... & Blumberg, H. P. (2012).**

Childhood trauma significantly contributes to negative mental health outcomes, such as depression and anxiety. The objective of the current study was to assess a proposed model that outlines how childhood trauma impacts psychiatric symptoms in individuals with depressive disorder. Individuals suffering from depressive disorder (n=585, 266 men, 316 women) participated in the study by completing the Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), Childhood Trauma Questionnaire (CTQ), and Cognitive Emotion Regulation Questionnaire (CERQ). They categorized cognitive emotion regulation strategies

into adaptive and maladaptive strategies based on a sub score from the CERQ. Structural equation modelling (SEM) and simple/multiple mediation analyses were utilized for our evaluation. These results support the proposed model indicating that childhood trauma is linked to adult depression and anxiety symptoms in clinical populations, with emotion regulation strategies serving as a mediator. The findings suggest that cognitive emotion dysregulation plays a crucial role in influencing depression and anxiety symptoms in patients who have experienced childhood trauma. **Huh, H. J., Kim, K. H., Lee, H. K., & Chae, J. H. (2017).**

Individuals who have experienced childhood trauma often show difficulties in regulating their emotions. Nonetheless, there are limited studies that have explored both perceived (self-reported) and behavioral assessments of distress tolerance about childhood trauma. This study by Berenz, E. C. et al, aimed to assess the relationships between different types of childhood trauma (including physical abuse, sexual abuse, and witnessing family violence) and measures of perceived distress tolerance (using the Distress Tolerance Scale) as well as behavioral distress tolerance (assessed through the Paced Auditory Serial Addition Test and breath-holding tasks). Increased experiences of physical abuse during childhood correlated with heightened perceived distress tolerance. In contrast, higher levels of witnessing family violence were linked to lower behavioral distress tolerance on the breath-holding test. The performance results for the Paced Auditory Serial Addition Test revealed no significant effects. The connections between childhood trauma and emotion regulation appear to be intricate and deserve further investigation. **Berenz, E. C., Vujanovic, A., Rappaport, L. M., Kevorkian, S., Gonzalez, R. E., Chowdhury, N., ... & Amstadter, A. (2018)**

The research by Dey, H. (2018) explores the effects of early childhood trauma and its long-lasting repercussions that can lead to enduring medical and psychological deficiencies. Experiencing early childhood trauma, particularly complex trauma, can result in neurobiological alterations that influence human development and significantly modify brain function. These alterations in brain structures are linked to cognitive and physical abilities. Research indicates that childhood trauma correlates with ongoing physical, mental, and emotional challenges that can carry over into adulthood. This article investigates the effects of trauma exposure from neurological, physiological, and psychological perspectives. The enduring repercussions of trauma exposure, including substance abuse, incarceration, and co-occurring psychiatric disorders, are addressed, along with the significance of recognizing protective factors, exploring resilience, and identifying evidence-based treatment approaches to assist in alleviating the symptoms experienced by trauma survivors. **Dye, H. (2018).**

Adverse childhood experiences (ACEs) are frequently explored in research examining the outcomes of children who have been abused or traumatized. Prior studies on ACEs have shown that higher levels of ACEs correlate with increased problem behaviours in adulthood and diminished support quality in romantic relationships during adolescence and early adulthood. Nevertheless, the possibility that strong romantic support and other positive relationship features might mitigate the adverse impacts of ACEs on subsequent problem behaviors has not been thoroughly investigated in the existing literature. Therefore, this study leverages data from an ongoing longitudinal examination of social relationships and related factors to assess how perceived support, along with observed instrumental and emotional support, moderates later involvement in problem behaviors. The findings provided evidence supporting the hypothesis that social support can serve as a protective buffer, while also indicating that it may inadvertently lead to greater involvement in problem behaviors.

Women diagnosed with Premenstrual Dysphoric Disorder (PMDD) are more prone to having experienced childhood trauma and may face more intense premenstrual symptoms. Nonetheless, the mechanism by which childhood trauma influences the frequency and intensity of premenstrual symptoms is still not well understood. Participants filled out the Premenstrual Symptoms Screening Tool (PSST), the Childhood Trauma Questionnaire (CTQ), and the Difficulties in Emotion Regulation Scale (DERS). This research enhances the understanding of the enduring impacts of childhood trauma. Encouraging the implementation of effective emotion regulation techniques for women with a history of childhood trauma may enhance their ability to manage and adjust to premenstrual fluctuations. **Azoulay, M., Reuveni, I., Dan, R., Goelman, G., Segman, R., Kalla, C., ... & Canetti, L. (2020).**

Childhood trauma, which includes physical, emotional, and sexual abuse as well as physical and emotional neglect, poses a significant risk for developmental disruptions and long-lasting negative effects. Adolescents and young adults who have experienced childhood trauma often undergo multiple traumatic events rather than just one. This study investigates how mentalizing and both cognitive and interpersonal emotion regulation strategies may mediate the relationship between exposure to various forms of childhood trauma and PTSD in adolescents and young adults. Participants filled out self-report questionnaires that measured childhood trauma, mentalizing abilities, cognitive and interpersonal emotion regulation strategies, and PTSD symptoms. The results indicate that experiencing multiple forms of childhood trauma leads to significant PTSD symptoms via several intricate pathways, which involve both hypo

mentalizing and ineffective emotion regulation strategies during adolescence and young adulthood. **Doba, K., Saloppé, X., Choukri, F., & Nandrino, J. L. (2022).**

Childhood trauma significantly affects various dimensions of adult relationships, such as emotional regulation, reflective functioning, and romantic attachment. This research intends to examine the intricate interactions between childhood trauma, emotional regulation, reflective functioning, interpersonal cognitive distortions, romantic attachment, and overall relationship satisfaction. The findings emphasize that childhood trauma notably influences emotional regulation and reflective functioning, which subsequently affects romantic attachment styles and relationship satisfaction. Importantly, insecure attachment styles, such as anxiety and avoidance, negatively impact relationship satisfaction. These results underline the necessity for integrating trauma-informed curricula and interventions within mental health practices. This study enhances the theoretical comprehension of trauma and attachment, advocating for the integration of trauma-informed methods in both educational and therapeutic environments. Practical suggestions include the creation of life-skills workshops aimed at improving emotional regulation and reflective functioning, as well as the incorporation of trauma-informed therapy in both individual and couple counselling. Policy suggestions involve establishing systems to alleviate the long-term repercussions of trauma. **Chaturvedi, Shiromi (2025)**

LITERATURE REVIEW ABOUT DISTRESS TOLERANCE:

Childhood Emotional Abuse (CEA) has been extensively associated with psychological issues, including deliberate self-harm (DSH) and suicidal behaviors (SB), indicating that these may serve as significant risk factors for later mental health disorders. CEA contributes to reduced emotional coping abilities, which may influence the severity of subsequent outcomes. The current study was conducted with a clinical sample seeking psychological support (n=70) and aimed to examine whether the experience of CEA was linked to challenges in managing distressing circumstances and to maladaptive coping strategies like DSH and SBs. Correlations revealed significant relationships among all variables. The study also assessed whether DT served as a mediator in the relationship between CEA and DSH, along with CEA and SBs. Mediation analysis revealed that DT did not mediate the connection between CEA and DSH. However, DT meaningfully mediated the relationship between CEA and SBs. The findings of

this study have important implications for future clinical practices and offer recommendations for clinical interventions aimed at enhancing DT skills to help reduce SBs.

Childhood trauma has been associated with impairments in functioning and the development and persistence of anxiety disorders in later life. This research explored the relationships between childhood trauma, DT, challenges in ER, and quality of life (QoL) among a group of adults (N = 73; 68% female) who met DSM-IV criteria for generalized or social anxiety disorder. Mediator analyses indicated that DT, rather than difficulties in ER, served as a mediator for the relationship between childhood emotional neglect and QoL in adulthood; however, when analysing emotional abuse instead of neglect, no significant indirect effects were detected. The paper discusses the implications of distinct pathways for emotional abuse and neglect in adults experiencing anxiety disorders**. Rosencrans, P. L., Bui, E., Rogers, A. H., Simon, N. M., & Baker, A. W. (2017).**

The study by Viana et al (2018) investigated how distress tolerance influences the connection between emotional clarity and deliberate self-harm (DSH) in a varied group of trauma-exposed adolescents receiving acute psychiatric care, who are at an elevated risk for suicidal behavior. A total of 50 participants (52.0% female; average age of 15.1 years, SD = 0.51; 44% White) completed assessments that measured emotion dysregulation, DSH, previous suicide attempts, and included a behavioral assessment of distress tolerance. After accounting for prior suicide attempts, the findings showed a significant interaction between distress tolerance and emotional clarity in relation to DSH. More specifically, difficulties in emotional clarity were associated with DSH at high levels, but at low level with distress tolerance. **Viana, A. G., Woodward, E. C., Raines, E. M., Hanna, A. E., & Zvolensky, M. J. (2018).**

Distress tolerance (DT; the perceived or actual capacity to endure negative internal experiences) has been recognized as a promising transdiagnostic risk factor in populations with severe clinical conditions. The current study examined various types of childhood trauma (including physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect) in relation to perceived (self-reported) and behavioral DT in a sample of 87 adults who experienced trauma and were receiving acute care in a psychiatric inpatient setting. Findings from hierarchical linear regression analyses revealed that increased childhood physical abuse and emotional neglect were significantly linked to higher perceived DT. However, higher levels of emotional abuse were connected to lower perceived DT, and greater physical neglect was linked to lower behavioral DT. These findings suggest that DT may be differentially

affected by various types of childhood trauma**. Berenz, E. C., Vujanovic, A. A., Rappaport, L., Kevorkian, S., Gonzalez, R. E., Chowdhury, N., ... & Amstadter, A. B. (2018).**

Stress is a crucial factor in both the onset and persistence of major depressive disorder (MDD). Notably, adverse alterations in the physiological mechanisms that regulate stress have been observed. This study aimed to examine whether stimulation of the noradrenergic system influences cognitive flexibility in individuals with MDD. Additionally, it sought to clarify the separate impacts of MDD and adverse childhood experiences (ACE), such as physical or sexual abuse, on cognitive abilities. Participants underwent testing twice following treatment with either 10 mg of yohimbine or a placebo. The difference in reaction times and accuracy between switch and repetition trials, known as switch costs, served as our independent variables. Findings indicated that MDD patients exhibited greater switch costs compared to controls, while ACE did not influence performance on the task. The administration of yohimbine did not impact task switching. These findings enhance our understanding of the LC-NA system's role as a neurobiological factor in cognitive processes among MDD patients. **Deuter, C. E., Wingenfeld, K., Otte, C., Bustami, J., Kaczmarczyk, M., & Kuehl, L. K. (2020).**

A substantial body of empirical research has established that experiencing maltreatment during childhood is linked to a heightened risk of developing mental health disorders in later life. The emerging body of research on distress tolerance (DT) indicates that it may serve as an explanatory or mediating factor in this relationship. Consequently, the current study aimed to investigate the mediating effect of DT on the link between childhood maltreatment and various psychopathologies (including posttraumatic stress disorder, depression, anxiety, and alcohol use) in adulthood, using a sample of university students (N = 642). The findings revealed that childhood maltreatment was positively correlated with the likelihood of all mental health outcomes being examined. Additionally, those with higher levels of DT were found to be less likely to experience negative mental health effects. The mediation analysis results suggested that the experience of childhood maltreatment remained linked to an increased risk of belonging to the symptomatic group across all mental health outcomes, and that DT played a significant mediating role in this connection. These findings shed light on the relationship between childhood maltreatment and later mental health issues, emphasizing the significance of considering DT as a potential risk and resilience factor within this context. **Robinson, M., Ross, J., Fletcher, S., Burns, C. R., Lagdon, S., & Armour, C. (2021).**

Individuals in psychiatric inpatient facilities constitute a distinct group characterized by elevated rates of suicidal thoughts and actions, as well as experiences of childhood abuse. Reduced levels of perceived distress tolerance (DT) correlate with a history of childhood abuse and suicidal thoughts and behaviors in later life. Research investigated the relationship between the severity of childhood abuse and both self-reported and behavioral measures of suicide through the lens of perceived DT in a cohort of adults residing in an acute-care psychiatric inpatient unit. The study involved 94 adults exposed to trauma (60% male; Mage = 33.43; SD = 12.06) who were admitted to a psychiatric acute-care inpatient hospital located in a major metropolitan area in the southern United States. All participants reported having encountered at least one form of childhood maltreatment, with varying levels of severity. They performed indirect effects analyses utilizing the PROCESS Macro for SPSS. The severity of childhood maltreatment was found to be indirectly linked to both the severity of suicidal ideation and prehospitalization suicidal behavior through the construct of DT. The results enhance the comprehension of the connection between childhood maltreatment and the heightened likelihood of suicidal thoughts and actions in adulthood, particularly within the psychiatric inpatient demographic. **Bartlett, B. A., Lebeaut, A., Zegel, M., Johnson, A., & Vujanovic, A. A. (2021).**

Childhood Emotional Abuse (CEA) has been extensively associated with psychological issues such as deliberate self-harm (DSH) and suicidal behaviors (SB), indicating they may represent significant risk factors for later mental health problems. CEA is linked to weaker emotional coping strategies, which may influence the severity of subsequent outcomes. Low distress tolerance (DT) is connected to DSH and enhanced susceptibility to suicide, a relationship that can be framed within a negative reinforcement model. The research detailed here was conducted with a clinical group seeking psychological assistance (n=70) and aimed to investigate whether experiencing CEA was related to challenges in tolerating distressing circumstances, along with maladaptive coping strategies such as DSH and SBs. Correlations demonstrated significant relationships among all variables. The research also assessed whether DT mediated the relationship between CEA and DSH, as well as between CEA and SBs. The mediation analysis revealed that DT did not mediate the connection between CEA and DSH. However, DT was found to significantly mediate the relationship between CEA and SBs. The findings of this study have important implications for future clinical practice and suggest interventions focusing on DT skills as a means to decrease SBs. **Williams, T. (2022)**

LITERATURE REVIEW ABOUT COGNITIVE FLEXIBILITY:

Childhood maltreatment (CM) has been linked to reduced executive functioning in both children and adults; nonetheless, there has been relatively little research concerning executive function in adolescents who have experienced CM. This study examines the connection between self-reported CM and a specific aspect of executive function, cognitive flexibility, in adolescents without recognized psychiatric disorders. The study explored the impacts of various maltreatment subtypes, including physical and emotional abuse and neglect. A group of thirty adolescents aged 12 to 17 years, consisting of 50% females, filled out the Childhood Trauma Questionnaire (CTQ) retrospectively and took the Wisconsin Card Sorting Test (WCST). Correlational analyses evaluated the relationship between age and education-normed WCST perseverative error scores and the total CTQ scores. The study also examined the correlations with non-perseverative errors and the subscales for physical and emotional abuse as well as neglect. Total CTQ scores showed significant correlations with WCST perseverative errors, but not with non-perseverative errors. Significant correlations with perseverative errors were found specifically for physical abuse and physical neglect among the CTQ subscales. The findings indicate that both physical abuse and physical neglect are related to reduced cognitive flexibility in adolescents. These effects were noted in adolescents without recognized psychiatric conditions, highlighting the significance of addressing executive dysfunction in those exposed to CM who may not qualify for an Axis I disorder diagnosis; furthermore, tests measuring perseverative errors, like the WCST, might serve as sensitive indicators of this dysfunction. **Blumberg, H. P. (2012).**

The purpose of the research was to explore how mindfulness, psychological flexibility, experiential avoidance, and cognitive flexibility act as mediators in the connection between childhood trauma and somatization. A total of 380 individuals aged 18 to 76 took part in the study. The study found that both mindfulness and psychological flexibility mediated the relationship between childhood trauma and somatization, whereas no mediating effect was identified for cognitive flexibility or experiential avoidance. Additionally, a mediating effect was noted for the sub-dimension of repression and denial. This research underscores the significance of exploring the mediator roles for future investigations regarding the link between childhood trauma and somatization. The outcomes of this study enhance understanding of the association between childhood traumas and somatization. **Özdemir, İ. (2021)**

In the study by turkkan et al. (2021), the mediating role of cognitive flexibility is examined in the connection between traumatic experiences during childhood and the tendency towards substance abuse. The analysis results indicated a positive and significant correlation among all subdomains of childhood trauma and substance abuse tendencies, while a negative and significant correlation was found between all dimensions of childhood abuse experiences and cognitive flexibility. Based on the mediating test results, cognitive flexibility was found to partially mediate the relationship between negative childhood experiences and substance abuse tendencies. The mediating influence of cognitive flexibility on the association between adverse childhood experiences and substance abuse tendencies accounted for 13% to 23% of the overall effect. **Odacı, H., Bülbül, K., & Türkkan, T. (2021).**

The study by Guler et al (2023), examined the connections among childhood trauma, resilience, cognitive flexibility, and the ability to regulate emotions in adulthood. For the methodology, the sample was derived from a relational screening model and consisted of 395 participants (female: 202, male: 193). Understanding the link between traumatic experiences in childhood and indicators of psychological resilience, cognitive flexibility, and cognitive emotion regulation techniques is essential to prevent these experiences from contributing to adult mental health challenges. Research on these traits will enhance clinical psychology practices, aiding individuals in evaluating their thoughts and emotions, recognizing negative coping strategies, rigid cognitive styles, and detrimental thinking patterns. **Güler, K., Demir, Z. G., & Yurtseven, C. S. (2023)**

The study by Torkaman et al. (2023), examined the connection between childhood trauma and the likelihood of drug abuse, while taking into account the mediating effects of cognitive flexibility and rumination in individuals diagnosed with post-traumatic stress disorder. The findings indicated that there is a positive and significant correlation between childhood trauma and drug abuse tendency, as well as rumination, and a negative and significant correlation with cognitive flexibility. Additionally, childhood trauma was found to have a positive and significant correlation with rumination and a negative and significant correlation with cognitive flexibility ($P<0.05$). Furthermore, the results from the path analysis revealed that both rumination and cognitive flexibility serve as mediators in the relationship between childhood trauma and drug abuse tendency. **Torkaman, M., Davoodi, A., Naziry, G., & Fath, N. (2023)**

Maternal self-efficacy is an essential element of successful parenting. It enriches the mother's experience and has far-reaching implications for the child's development, well-being, mother-

child bond, and overall family relationships. This study utilized four steps of hierarchical regression analysis within the framework of parental self-efficacy theory to investigate the predictive ability of demographics, childhood trauma, adult attachment, and cognitive flexibility in relation to maternal self-efficacy. The results indicated that the overall model accounted for an 18% variation in maternal self-efficacy scores. Among the control variables, the mother's age showed consistency, as it remained stable regardless of the other variables examined. Meanwhile, education and employment status did not exhibit significant predictive power regarding maternal self-efficacy. The results from the hierarchical regression analysis revealed that childhood trauma and adult attachment serve as predictors of maternal self-efficacy. However, their significance diminished when cognitive flexibility was considered. This finding implies that, similar to cognitive flexibility, various contextual and individual factors may mitigate the adverse effects of childhood trauma and insecure attachments. These findings could assist in developing policies, interventions, and programs aimed at enhancing parental self-efficacy, which would improve parenting practices, strengthen parent-child relationships, and ultimately lead to better outcomes for children. **Söğüt, M., & Köse, A. (2023)**

The research conducted by Solgi, Z. (2023) aimed to explore the connection between childhood trauma, cognitive flexibility, and cognitive distortions in predicting self-harming behaviors in female adolescents in Shahrood, Iran. Participants had at least one instance of self-harming behavior documented in their clinical histories. The findings of this research could inform initiatives aimed at increasing mental health awareness among students and enhancing school programs to prevent self-harm. **Solgi, Z. (2023).**

Adolescence is a stage of development wherein adverse childhood experiences can greatly affect the individual due to alterations in brain structure and function. The focus of this research is to explore the connection between maltreatment and emotional regulation, while also examining the moderating effect of cognitive flexibility in adolescents who have experienced childhood trauma. This study demonstrates that cognitive flexibility can serve as a moderator when evaluating the effects of trauma. The developed task may offer an innovative approach to assess this flexibility within an emotional framework. **Gholamipour, N. (2023).**

Trauma exposure (TE) and cognitive flexibility (CF) are associated with risks for self-injurious thoughts and behaviors (SITBs). This study investigated the potential moderating effect of TE on the relationships between CF and several SITBs, including active suicidal ideation (SI),

passive SI, non-suicidal self-injury (NSSI), and past suicide attempts (SA), in pre-adolescent children. The findings of this study clarify previously conflicting results regarding the link between CF and SI by identifying cumulative TE as a moderating factor. CF acted as a protective element against SI, but this was only observed in children who had experienced a single instance of trauma in their lifetime. The discussion includes implications for screening and targeting treatments for children who are at risk for specific types of SITBs. **Chen, S. E., Chick, C. F., & O'Hara, R. (2024)**

Childhood trauma and stressful life experiences have been recognized as contributing factors to the onset of depression.This research seeks to explore the relationships among childhood trauma, stressful life experiences, and depression, while also testing a mediating model to investigate the influence of cognitive flexibility within these relationships. The study indicates that both childhood trauma and stressful life events exert a direct influence on depression while also heightening the risk of depression by impairing cognitive flexibility. These results provide insight into the possible mechanisms involved in the suicide process and emphasize the crucial role of cognitive flexibility in suicide prevention and intervention. **Huang, W., Fang, Y., Tan, X., & Zhao, J. (2024)**

LITERATURE REVIEW ABOUT EMOTION REGULATION:

This research explored how emotion regulation is linked to various types of child abuse and the resulting posttraumatic stress. Special emphasis was placed on emotional abuse, which has not been as thoroughly studied in the existing literature. Findings from a survey involving 912 female college students indicated that those with a background of sexual, physical, or emotional abuse reported more challenges with emotion regulation than those without such histories. Interestingly, emotional abuse emerged as the most significant predictor of difficulties in emotion regulation. Mediation analyses suggested that issues with emotion regulation partially accounted for the connection between physical and emotional abuse and posttraumatic stress symptoms, implying that interventions focused on enhancing emotion regulation strategies could be effective in reducing posttraumatic stress among women with histories of child maltreatment. **Burns, E. E., Jackson, J. L., & Harding, H. G. (2010)**

Child abuse can have a detrimental impact on neurobiological systems that are responsible for managing emotions. Adults who experienced maltreatment in their childhood exhibit a reduced ability to effectively integrate the prefrontal and limbic circuits that are fundamental to emotion regulation. In this study using a facial identification Stroop task with both emotional and nonemotional stimuli, researcher discovered that women who reported higher levels of childhood abuse (N = 44) did not differ from those reporting lower levels of abuse (N = 45) in terms of nonemotional conflict adaptation; however, they showed a significant decrease in their ability to adapt to emotional conflict. Specifically, women who had experienced more abuse struggled notably with adapting to emotional conflict when faced with incongruent stimuli that included a fearful face. These findings contribute to the understanding of the relationship between cognitive control and emotion regulation, emphasizing the extensive consequences of childhood abuse on cognitive-emotional flexibility. **Caldwell, J. G., Krug, M. K., Carter, C. S., & Minzenberg, M. J. (2014)**

Psychological stress experienced in early life is believed to significantly contribute to the onset of borderline personality disorder (BPD) and major depressive disorder (MDD), although the specific mediating factors are still unclear. This research aimed to explore self-reported experiences of childhood trauma, challenges in emotion regulation, and the relationships between these factors in groups of patients with BPD (n = 49) and MDD (n = 48), as well as in healthy control individuals (n = 63). The findings indicated a connection between self-reported experiences of maltreatment, particularly emotional abuse and neglect, and challenges in emotion regulation. Further analyses revealed that difficulties in emotion regulation mediate the relationship between self-reported emotional abuse and acute symptoms in individuals with BPD. Thus, problems with emotion regulation may be one mechanism through which early life stress, especially emotional abuse, heightens the likelihood of developing symptoms associated with BPD. **Wingenfeld, K. (2014).**

Childhood trauma might increase the risk of poorer health in adulthood by influencing systemic inflammation. Emotion regulation might reasonably moderate the relationship between childhood trauma and adult psychological well-being, but it is still uncertain whether these moderation effects also relate to variations in systemic inflammation. This study aims to explore if childhood trauma and emotion regulation independently and interactively predict future changes in C-reactive protein (CRP) and interleukin-6 (IL-6), and whether biopsychosocial factors explain the observed relationships. In this research, healthy midlife adults (N = 331) recalled their experiences of childhood trauma, reported their current levels

of cognitive reappraisal and expressive suppression, and provided blood samples. The presence of childhood trauma was linked to future increases in CRP ($B = 0.004$, $p = 0.049$), which were partially explained by variations in body fat, psychological distress, and health behaviors. On the other hand, cognitive reappraisal was associated with future reductions in IL-6 ($B = -0.007$, $p = 0.006$), independent of biopsychosocial factors. Additionally, cognitive reappraisal moderated the connection between childhood trauma and future IL-6 changes ($B = -0.001$, $p = 0.012$), indicating that while childhood trauma led to increased IL-6 levels, this effect was only significant in individuals with lower cognitive reappraisal abilities ($B = 0.006$, $p = 0.007$). No significant main or moderation effects were found for expressive suppression ($ps > 0.05$). Cognitive reappraisal may mitigate changes in IL-6 over time and could moderate the future relationship between childhood trauma and systemic inflammation in midlife. **Marusak, H. A., Martin, K. R., Etkin, A., & Thomason, M. E. (2015)**

Childhood trauma raises the likelihood of experiencing both depression and maladaptive emotion regulation, a factor that has been closely associated with depression. In this study, researchers examined the indirect influence of emotion regulation (measured using the Emotion Regulation Skills Questionnaire) on the connection between childhood trauma (assessed by the Childhood Trauma Questionnaire) and the severity of depression (determined by the 24-item Hamilton Rating Scale for Depression) as well as the lifetime persistence of depression (i.e., the percentage of life spent in major depressive episodes, evaluated through SCID and Life Chart Interviews) in a sample of 269 patients diagnosed with major depressive disorder (MDD). The results lend support to the idea that effective emotion regulation might aid in preventing the onset or negative progression of depression in those who have faced childhood trauma. **Hopfinger, L., Berking, M., Bockting, C. L., & Ebert, D. D. (2016).**

The repercussions of child sexual abuse are extensive and deeply damaging. Many children who have been sexually abused also face other types of maltreatment that can significantly impair their ability to regulate emotions and hinder their overall development. This study aimed to investigate the roles of emotion regulation and dissociation as mediators in the link between cumulative childhood trauma and both internalized and externalized behavioral issues in children who have suffered sexual abuse. It is essential for clinicians to routinely check for additional forms of childhood trauma among at-risk populations. To effectively address behavioral problems in sexually abused youth, clinical interventions must focus on improving emotion regulation skills and addressing dissociation. **Hébert, M., Langevin, R., & Oussaïd, E. (2018).**

Difficulties in regulating emotions have been linked to various forms of psychopathology and could be a crucial aspect for current research aimed at comprehending the biological mechanisms that underlie transdiagnostic symptoms. This study explored a gene-environment interaction (G × E) in reappraisal, a type of emotion regulation that has been significantly associated with psychopathological issues. Given recent meta-analytic data showing its consistent involvement in depression and anxiety disorders, this research concentrated on the Val66Met (rs6265) single-nucleotide polymorphism within the brain-derived neurotrophic factor (BDNF) gene, investigating its moderating role in the connection between childhood trauma and reappraisal. The findings revealed that, as anticipated, BDNF Val66Met was a significant moderator in the relationship between childhood trauma and reappraisal. There was an inverse relationship between the frequency of childhood traumatic experiences and reappraisal ability among BDNF Met carriers, whereas Val homozygotes did not show this relationship. This outcome implies that BDNF Val66Met may heighten vulnerability to childhood stress, resulting in long-term effects on emotion regulation**. Bîlc, M. I., Vulturar, R., Chiș, A., Buciuman, M., Nuţu, D., Bunea, I., ... & Miu, A. C. (2018).**

Numerous studies have shown that childhood trauma, difficulties in managing emotions, and the experience of physical pain may play a role in the onset and ineffective treatment of alcohol use disorder (AUD). The research involved a sample of 165 individuals who have been diagnosed with AUD. The Childhood Trauma Questionnaire (CTQ) was utilized to examine various types of childhood trauma, including physical, emotional, and sexual abuse as well as neglect; the Brief Symptom Inventory assessed anxiety symptoms; the Difficulties in Emotion Regulation Scale (DERS) was employed to evaluate emotional dysregulation; and the Pain Resilience Scale along with the Pain Sensitivity Questionnaire measured self-reported pain tolerance and sensitivity. A positive correlation was found between childhood emotional abuse (CTQ subscale score) and anxiety, while anxiety was also positively linked to emotional dysregulation, which in turn was negatively associated with pain tolerance. Therefore, there was evidence supporting a significant indirect negative relationship between childhood emotional abuse and pain tolerance. The serial mediation analysis indicated that anxiety and emotional dysregulation acted as mediators for the impact of childhood emotional abuse on pain resilience in individuals with AUD. Focusing on emotional dysregulation and physical pain resulting from childhood trauma could be particularly beneficial in the treatment of individuals with AUD. **Zaorska, J., Kopera, M., Trucco, E. M., Suszek, H., Kobyliński, P., & Jakubczyk, A. (2020).**

Child maltreatment is consistently associated with negative mental and physical health outcomes, highlighting the importance of identifying risk factors and resilience mechanisms for prevention initiatives. The ways individuals manage stress and regulate their emotions can mitigate existing risks, while shortcomings in these areas may heighten those risks. Therefore, one possible explanation for the link between early-life abuse and neglect and subsequent maladjustment is how youth who have experienced maltreatment handle stress as they grow. This current review presents a quantitative assessment of how early-life maltreatment affects coping and emotional regulation during childhood and adolescence (ages 5 to 18). The findings suggest that maltreatment is generally linked to inadequate emotion regulation, as well as a tendency towards avoidance, emotional suppression, and the expression of negative emotions when faced with stress. The implications of these results are discussed, along with a proposed agenda for future research. **Gruhn, M. A., & Compas, B. E. (2020).**

Adverse childhood experiences may increase the likelihood of poorer health in adulthood due to alterations in systemic inflammation. This study aimed to determine if childhood trauma and emotion regulation independently and interactively predict future changes in C-reactive protein (CRP) and interleukin-6 (IL-6) and whether biopsychosocial elements influence the observed connections. A sample of healthy midlife adults (N = 331) retrospectively assessed their experiences of childhood trauma, current levels of cognitive reappraisal and expressive suppression, and provided blood samples. At the start and again after a median period of 2.85 years, 279 out of the 331 participants had their blood drawn, body mass index calculated, and reported on various health-related behaviors (such as smoking and sleep), psychological distress (including perceived stress and depressive symptoms), and education levels. There were no significant main or moderation effects associated with expressive suppression (ps > 0.05). Cognitive reappraisal could potentially reduce IL-6 fluctuations over time and may moderate the future relationship between childhood trauma and systemic inflammation during midlife. **Jones, E. J., Marsland, A. L., & Gianaros, P. J. (2023)**

METHODS

Aim of the study:

To explore the effect of some significant childhood adverse experience on distress tolerance, cognitive flexibility and emotion regulation among young adults.

Objectives:

1. To find out if there is any effect of different types of childhood trauma (physical neglect, emotional neglect, emotional abuse and sexual abuse) on distress tolerance.
2. To find out if there is any effect of different types of childhood trauma (physical neglect, emotional neglect, emotional abuse and sexual abuse) on cognitive flexibility.
3. To find out if there is any effect of different types of childhood trauma (physical neglect, emotional neglect, emotional abuse and sexual abuse) on emotion regulation (reappraisal).
4. To find out if there is any effect of different types of childhood trauma (physical neglect, emotional neglect, emotional abuse and sexual abuse) on emotion regulation (suppression).

Hypotheses:

H_0.1. There exists no significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on distress tolerance.

H_1.1. There exists significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on distress tolerance.

H_0.2. There exists no significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on cognitive flexibility.

H_1.2. There exists significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on cognitive flexibility.

H_0.3. There exists no significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on emotion regulation (reappraisal).

H_1.3. There exists significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on emotion regulation (reappraisal).

H_0.4. There exists no significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on emotion regulation (suppression).

H_1.4. There exists significant mean difference among effect of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on emotion regulation (suppression).

Variables:

A variable is defined as an event or conditions which can have different values; ideally in experiments, an event or condition which can be measured. Variables may be defined as those attributes of objects, events, things, and being which can be measured. In other words, variables are characteristics or conditions that are manipulated, controlled or observed by the experimenter. **(A.K. Singh, 2004)**

The present study intends to explore the relationship between distress tolerance, cognitive flexibility and emotion regulation among adults with some significant childhood adverse experience. Thus, the main variables selected for this study are,

- **Independent variable**:

Childhood trauma

a) Physical neglect

b) Emotional abuse

c) Emotional neglect

d) Sexual abuse

- **Dependent variable**:

    1. Distress tolerance
    2. Cognitive flexibility
    3. Emotion regulation (reappraisal, suppression)

Definitions of variables:

Independent variables

Childhood trauma: Childhood trauma refers to experiences during childhood, including witnessing or experiencing dangerous, violent, or life-threatening events, that can cause lasting emotional and psychological distress. Childhood trauma can have a profound and lasting impact on a child's development which may lead to difficulties with emotional regulation, relationships, and overall well-being

1. Physical neglect: Neglect may include inadequate health care, education, supervision, protection from undesirable environment, and unmet basic needs such as clothing and food. Neglect is the most common form of childhood abuse.
2. Emotional abuse: Emotional abuse includes verbal abuse, humiliation, and acts that scare a child, and also might result in future psychological illness of the child.
3. Emotional neglect: Childhood emotional neglect, occurs when caregivers fail to provide the emotional and psychological support, validation, or attention a child needs while growing up, resulting in a lack of emotional responsiveness and nurturing.
4. Sexual abuse: Sexual abuse is defined as “the involvement of dependent, developmentally immature children and adolescents in sexual activities to which they are unable to give consent, or that violate the social taboos of family roles.”

Dependant variable:

- Distress tolerance: Distress tolerance refers to an individual's ability to withstand and manage negative emotions, uncomfortable physical sensations, and stressful situations without resorting to unhealthy coping mechanisms.

- Cognitive flexibility: Cognitive flexibility is the ability to adapt thinking and behavior in response to changing environmental demands, including switching between tasks, strategies, or perspectives. It's a crucial component of executive function, alongside working memory and inhibitory control.
- Emotion regulation: Emotion regulation (ER) is the ability to manage and respond to emotions. It's a complex topic that involves conscious and unconscious strategies to influence how we feel, behave, and experience emotions. **Reappraisal** involves changing how we think about a situation to alter its emotional impact, while **suppression** involves inhibiting the outward expression of an emotion.

PARTICIPANTS:

Demographic details:

- **Age**: In the present study, adults ranging from 18 to 25 years were taken.
- **Sex of the participants**: Both male and female were considered as participant for this study.
- **Physical and mental health of the participants:** Subjects with identifiable physical and mental health disorder were excluded using GHQ-28 questionnaire, as it is evident that these variables might have a negative effect on the cognition of the individuals including distress tolerance, cognitive flexibility and emotion regulation.

Selection of samples:

Inclusion criteria:

- Age of the participants ranging from 18 to 25 years.
- Having any significant adverse childhood experience.
- Having education qualification of graduate or post graduate.
- Must be a citizen of West Bengal.

Exclusion criteria:

- History of any chronic physical disease.
- History of any chronic mental disorder.
- GHQ score more than 5.

Final sample selection:

Total 115 samples were collected using **Purposive sampling**. 80 samples were selected between those 115 samples for the current research. As the inclusion criteria requirement, by using **Childhood Trauma Questionnaire–Short Form (CTQ-SF) by Bernstein D., Fink L. 1998** few data were discarded as there were no significant adverse childhood experience. Few data were discarded using the **General health questionnaire (GHQ-28) by Goldberg and Hiller (1979)** as their scores were above 5. Among these 115 samples, 20 has physical neglect, 20 has emotional abuse, 20 has emotional neglect and 20 has sexual abuse history.

The final sample is represented below:

Physical neglect	Emotional abuse	Emotional neglect	Sexual abuse
20	20	20	20
Total 80			

MEASURES USED IN THE STUDY:

In the following section the selection and description of the measures of the variables are present.

Measures of the independent variable:

- A detailed information schedule for personal information.
- Childhood Trauma Questionnaire–Short Form (CTQ-SF) by **Bernstein D., Fink L. (1998)** for identifying the presence of any significant adverse childhood experience.
- General Health Questionnaire (GHQ-28) by **Goldberg and Hillier (1979)**

The tools are described in details below:

- The detailed information schedule:

The information schedule for the subjects consisted of name of the subject, sex, age, educational qualification, occupation, presence of any chronic physical or mental disorder and presence of any significant adverse childhood experience.

- Childhood Trauma Questionnaire–Short Form (CTQ-SF) by Bernstein D., Fink L. (1998):

Description: Childhood Trauma Questionnaire–Short Form (CTQ-SF; Bernstein & Fink, 1998) consists of 28 items, of which 25 measure childhood maltreatment (total), including five subscales of five items each, i.e., Emotional Abuse (EA), Physical Abuse (PA), Sexual Abuse (SA), Emotional Neglect (EN) and Physical Neglect (PN). Three items are designed to measure Minimisation/Denial (M/D). All 28 items are constructed as statements beginning with the phrase 'When I was growing up…' All five abuse and neglect subscales are sums of the scorings from 'never true' (score 1) to 'very often true' (score 5), and after reversing seven items, all subscales can therefore vary between 5 and 25. (Bernstein & Fink, 1998; Gerdner & Allgulander, 2009; MacDonald et al., 2016).

Reliability and validity: Principal-components analysis of responses on the Childhood Trauma Questionnaire yielded four rotated orthogonal factors: physical and emotional abuse, emotional neglect, sexual abuse, and physical neglect. Cronbach's alpha for the factors ranged from 0.79 to 0.94, indicating high internal consistency. The Childhood Trauma Questionnaire also demonstrated good test-retest reliability over a 2- to 6-month interval (intraclass correlation = 0.88), as well as convergence with the Childhood Trauma Interview, indicating that patients' reports of child abuse and neglect based on the Childhood Trauma Questionnaire were highly stable, both over time and across type of instruments.

Administration: Childhood Trauma Questionnaire–Short Form (CTQ-SF) is a self-administering screening test. There is no time limit to complete it. The instructions precede the inventory.

Scoring and interpretation: The scoring follows the 5 points Likert scale where, never true = 1, Rarely true =2, Sometimes true = 3, Often true = 4, Very often true = 5.

Some items have the inverse, though. These specific items are Items 2, 5, 7, 13, 19, 26, and 28. So, "Never true" is equal to 5, and "Very often true" is equal to 1.

Scores more than 8 in emotional abuse, 5 in sexual abuse, 7 in physical neglect and 9 in emotional neglect; indicates presence of significant adverse childhood experience in those specific subdomains.

- General Health Questionnaire (GHQ-28) by Goldberg and Hillier (1979):

Description: GHQ was designed to be a self-administered screening test aimed at detecting short-term changes in mental health among respondents. It was designed by Goldberg and Hiller at 1979 as a state measure. The questionnaire is objective in the sense, that it does not require the person administering it to make subjective assessment about respondents. There are different versions of GHQ available depending upon the nature of items.GHQ-28 containing 28 items was derived from factor analysis of GHQ 60. It consists of 4 subscales for somatic symptom, anxiety and insomnia, social dysfunction and severe depression. It is as good as any other version of GHQ as a case detector, at the same time it gives scaled sub-scores, if necessary. Each item has 4 response alternatives. Its sensitivity was found to be 0.8 and specificity 0.88.

Reliability and validity: The GHQ-88 has been adapted in Bengali culture by **Basu and Dasgupta (1996)**. There was no difficulty in its applicability in this culture. In this adaptation item analysis was done. It split half reliability was found to be 0.97. its sensitivity and specificity were 1.00 and .88 respectively.

Administration: The GHQ-28 is a self-administered screening test. There is no time limit to complete it. The instruction precedes the inventory.

Scoring and interpretation: Scoring was done by GHQ method (0-0-1-1) as suggested by Goldberg and Williams (1988). Threshold for case identification was taken as 4/5, i.e., score 4 signifies a non-psychiatric case and 5 signifies a psychiatric case. Total score ranges from 0 to 28.

Measures of dependent variable:

- Distress tolerance scale by **Simons and Gaher, 2005** to identify the level of stress tolerance of the participants.

- Cognitive flexibility scale by **M.M Maartin and R.B. Rubin (1995)** to identify the cognitive flexibility of the participants.
- Emotion regulation scale by **Gross, J.J., & John, O.P. (2003)** to measure the emotion regulation that is both reappraisal and suppression of the participants.

The tools are described in details below:

- Distress Tolerance Scale (DTS) by Simons and Gaher (2005):

Description: The Distress Tolerance Scale (DTS) is a 15-item self-report measure developed by Simons and Gaher (2005) that assesses an individual's perceived ability to withstand negative emotions, using a 5-point Likert scale, with higher scores indicating greater distress tolerance.

Reliability and validity: Studies have consistently shown good internal consistency for the DTS, with Cronbach's alpha values typically ranging from 0.70 to 0.90 for the overall scale and subscales. The DTS also demonstrates good test-retest reliability, meaning that scores are relatively stable over time. The DTS shows convergent validity, meaning it correlates with other measures that are theoretically related to distress tolerance, such as measures of emotion regulation and negative affect. It has been shown to be associated with neuroticism and difficulties with emotion regulation, supporting its concurrent validity.

Administration: Distress Tolerance Scale (DTS) by Simons and Gaher (2005) is a self-administering screening test. There is no time limit to complete it. The instructions precede the inventory.

Scoring and interpretation: Participants rate each of the 15 items on a 5-point Likert scale, ranging from "Strongly Agree" (1) to "Strongly Disagree" (5). The total DTS score is calculated by adding the scores of all 15 items together, after reverse-coding item 6. Higher scores indicate greater distress tolerance.

- Cognitive flexibility scale (CFS) by M.M Maartin and R.B. Rubin (1995):

Description: The CFS was designed to measure components of cognitive flexibility linked to interpersonal communication competence. It is composed of 12 items that assess an individual's awareness of different views and behaviors, as well as their readiness and self-efficacy to consider those different choices. The scale includes statements about beliefs and feelings about

one's own behavior, such as "I can communicate an idea in many different ways" and "I am willing to work at creative solutions to problems".

Reliability and validity: The 12-item Cognitive Flexibility Scale (CFS) demonstrates good reliability and validity, with Cronbach's alpha exceeding 0.8 and test-retest reliability being moderate to good, indicating internal consistency and satisfactory stability. The CFS is designed to assess cognitive flexibility, which is defined as awareness of alternative communication styles, willingness to adapt to situations, and self-efficacy in being flexible.

Administration: Cognitive flexibility scale (CFS) by M.M Maartin and R.B. Rubin (1995) is a self- administering screening test. There is no time limit to complete it. The instructions precede the inventory.

Scoring and interpretation: Participants rate their agreement with each statement on a 6-point Likert scale, ranging from "1 (strongly disagree)" to "6 (strongly agree)". Items 2, 3, 5, and 10 are reverse-coded, meaning that a higher score on these items indicates a lower level of agreement with the statement. Total scores range from 12 to 72. Higher scores indicate greater cognitive flexibility, reflecting an individual's awareness of alternatives, willingness to adapt, and self-efficacy in being flexible.

- Emotion regulation scale by Gross, J.J., & John, O.P. (2003):

Description: The ERQ (Gross and John, 2003) is a 10-item self-report measure of how frequently people use two emotion regulation strategies: cognitive reappraisal (e.g., “When I want to feel less negative emotion, I change the way I'm thinking about the situation”) and expressive suppression (e.g., “I keep my emotions to myself”). It aims to measure how frequently individuals use cognitive reappraisal (changing how they think about a situation to alter its emotional impact) and expressive suppression (inhibiting the outward expression of an emotion). It consists of 10 items, with 6 items focusing on cognitive reappraisal and 4 on expressive suppression.

Reliability and validity: The 10-item Emotion Regulation Questionnaire (ERQ), measuring cognitive reappraisal and expressive suppression, demonstrates good reliability and validity in various populations, including older adults and general community samples. The ERQ exhibits strong internal consistency, with Cronbach's alpha (α) values typically ranging from 0.75 to 0.88 for both the cognitive reappraisal and expressive suppression subscales. Studies have also shown adequate test-retest reliability, with correlations ranging from 0.64 to 0.66.

Administration: The ERQ (Gross and John, 2003) is a self- administering screening test. There is no time limit to complete it. The instructions precede the inventory.

Scoring and interpretation: The ERQ assesses how frequently individuals use cognitive reappraisal (changing how they think about a situation to feel less negative) and expressive suppression (keeping their emotions to themselves). Respondents answer each of the 10 items on a 7-point Likert scale, ranging from "1 (strongly disagree)" to "7 (strongly agree)". Higher scores indicate a greater tendency to use that particular emotion regulation strategy. Items 1, 3, 5, 7, 8, 10 make up the Cognitive Reappraisal facet. Items 2, 4, 6, 9 make up the Expressive Suppression facet.

Procedure:

On the basis of inclusion and exclusion criteria with the help of purposive sampling, 80 subjects having significant adverse childhood experience were selected among 115 data. Subjects were assed using a detailed information schedule for personal information, Childhood Trauma Questionnaire–Short Form (CTQ-SF) by Bernstein D., Fink L. (1998) for identifying the presence of any significant adverse childhood experience, General Health Questionnaire (GHQ-28) by Goldberg and Hillier (1979) as a screening tool to identify individuals with potential psychological disorders, Distress tolerance scale by **Simons and Gaher, 2005** to identify the level of stress tolerance of the participants, Cognitive flexibility scale by **M.M Maartin and R.B. Rubin (1995)** to identify the cognitive flexibility of the participants, Emotion regulation scale by **Gross, J.J., & John, O.P. (2003)** to measure the emotion regulation that is both reappraisal and suppression of the participants. Total time taken to for filling the complete data sheet was 20 to 25 minutes.

Statistical analysis:

Statistical analysis of the data was done with the help of statistical package for social sciences, window version 16 (SPSS16). As the sample size was 80 participants constituting 20 physical neglect, 20 emotional abuse, 20 emotional neglect, 20 sexual abuse, consisting a small size of the sample, non-parametric statistics were considered. Kruskal Wallis test was done. Analysis of significance was done at 0.05 level as critical value.

RESULTS

To explore the effect of some significant childhood adverse experience on distress tolerance, cognitive flexibility and emotion regulation among adults, at first the Shapiro wilk test of the total data was done to see if the data is normally distributed.

Table 1: The Shapiro-wilk test; used for normality of the data

Childhood trauma		**Shapiro Wilk**		
		Statistics	df	Sig.
Distress tolerance	Physical neglect	.896	20	.035
	Emotional abuse	.907	20	.057
	Emotional neglect	.924	20	.117
	Sexual abuse	.948	20	.334
Cognitive flexibility	Physical neglect	.978	20	.899
	Emotional abuse	.963	20	.612
	Emotional neglect	.910	20	.064
	Sexual abuse	.878	20	.017
Reappraisal	Physical neglect	.947	20	.324
	Emotional abuse	.841	20	.004
	Emotional neglect	.891	20	.028
	Sexual abuse	.877	20	.016
Suppression	Physical neglect	.882	20	.019
	Emotional abuse	.898	20	.038
	Emotional neglect	.773	20	.000
	Sexual abuse	.862	20	.008

Here as per the above table, we can see that 6 out of 16 data are normally distributed as the p-value is greater than significance level 0.05.

As some of the data are normally distributed and some are not and although the total number of samples is 80 but it is divided into 4 groups each having 20 sample; hence we have a small sample size. Therefore, we are doing the nonparametric statistics: Kruskal Wallis test.

Table 2: The mean of all the 80 data having adverse childhood experience with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression).

	N	Mean	Std. deviation	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Std. error	Statistics	Std. error
Distress tolerance	80	24.31	3.196	-.244	.269	.742	.532
Cognitive flexibility	80	22.96	4.408	.584	.269	.589	.532
Reappraisal	80	18.75	4.822	.790	.269	.567	.532
Suppression	80	12.19	2.715	-.686	.269	5.412	.532

Here as per the above table we can see, distress tolerance has highest mean value (24.31); followed by cognitive flexibility (22.96), reappraisal (18.75) and suppression (12.19).

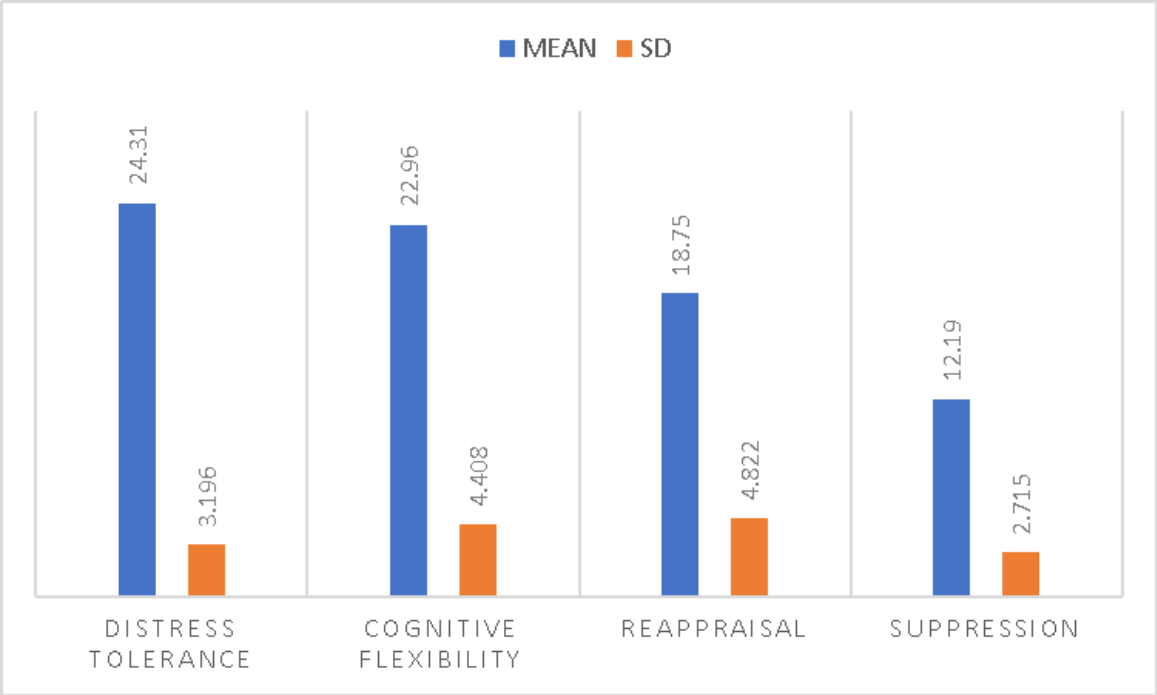
As the mean value provide a quick overview of the typical value within the data, we can safely say that the 80 individuals having some significant childhood adverse experience, have given higher score in distress tolerance questionnaire as compared to other. Which eventually indicates that childhood trauma has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.

As we know that distress tolerance is the ability to overcome emotional distress, including aversive feelings and thoughts; so here highest mean value in distress tolerance suggests that

significant childhood adverse experiences has increased the subject's ability and tolerance level to understand and cope up with any kind of stressful situation.

As the mean value of cognitive flexibility follows the mean value of distress tolerance, we can imply that although they face some difficulty in adapting their thinking and behavior to changing situations, although they finally tend to overcome it.

In term of emotion regulation of the 80 subjects, which we are measuring in the basis of reappraisal and suppression; we can see that the mean value of reappraisal is greater than suppression. It implies that individuals having significant adverse childhood experience, involves in changing the way they perceive a situation to alter its emotional impact rather than suppressing it.



Above is the bar graph representing the mean value and SD of all the 80 data.

Table 3: The mean value of 20 individuals having physical neglect, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression).

	N	Mean	Std. deviation	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Std. error	Statistics	Std. error
Distress tolerance	20	23.15	2.159	-.145	.512	-.477	.992
Cognitive flexibility	20	22.00	3.293	-.187	.512	-.278	.992
Reappraisal	20	15.60	3.347	.650	.512	.500	.992
Suppression	20	11.55	1.317	.341	.512	-.751	.992

Here as per the above table we can see, distress tolerance has highest mean value (23.15); followed by cognitive flexibility (22.00), reappraisal (15.60) and suppression (11.55).

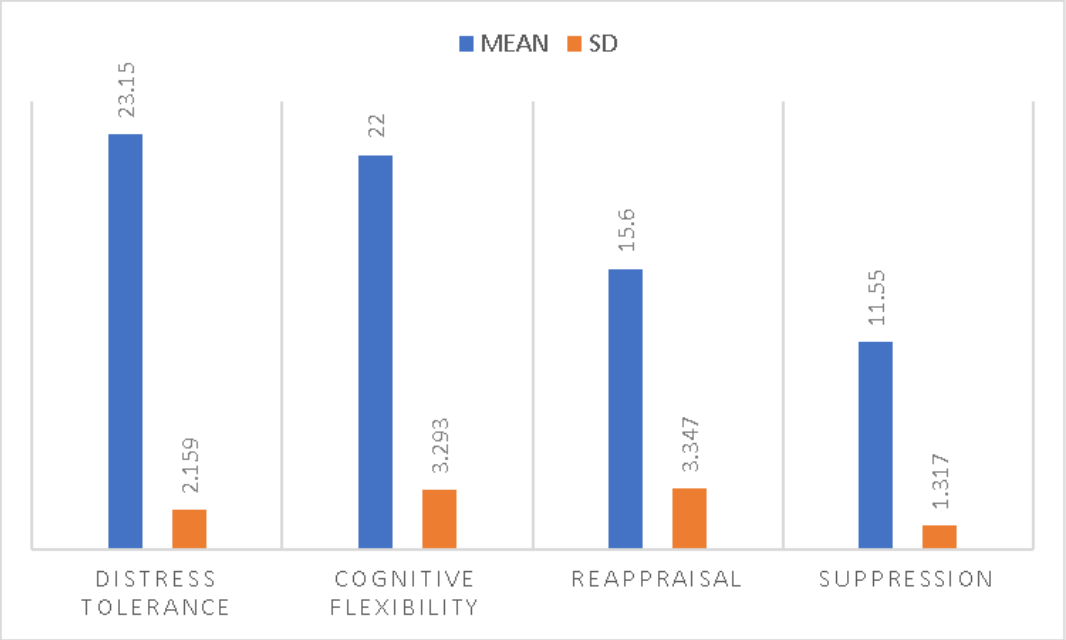
As the mean value provide a quick overview of the typical value within the data, we can safely say that the 20 individuals experiencing physical neglect, have given higher score in distress tolerance questionnaire as compared to other. Which eventually indicates that physical neglect has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.

As we know that distress tolerance is the ability to overcome emotional distress, including aversive feelings and thoughts; so here highest mean value in distress tolerance suggests that physical neglect has increased the subject's ability and tolerance level to understand and cope up with any kind of stressful situation.

As the mean value of cognitive flexibility follows the mean value of distress tolerance, we can imply that although they face some difficulty in adapting their thinking and behavior to changing situations, although they finally tend to overcome it.

In term of emotion regulation of the 20 subjects, which we are measuring in the basis of reappraisal and suppression; we can see that the mean value of reappraisal is greater than

suppression. It implies that individuals having physical neglect during childhood, involves in changing the way they perceive a situation to alter its emotional impact rather than suppressing it.



Above is the bar graph representing the mean value and SD of the 20 data having physical neglect.

Table 4: The mean value of 20 individuals experiencing emotional abuse, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression).

	N	Mean	Std. deviation	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Std. error	Statistics	Std. error
Distress tolerance	20	24.65	2.739	-.292	.512	-1.131	.992
Cognitive flexibility	20	23.30	4.589	.413	.512	1.119	.992
Reappraisal	20	20.20	4.851	.064	.512	-1.819	.992
Suppression	20	11.55	2.113	-.255	.512	-1.408	.992

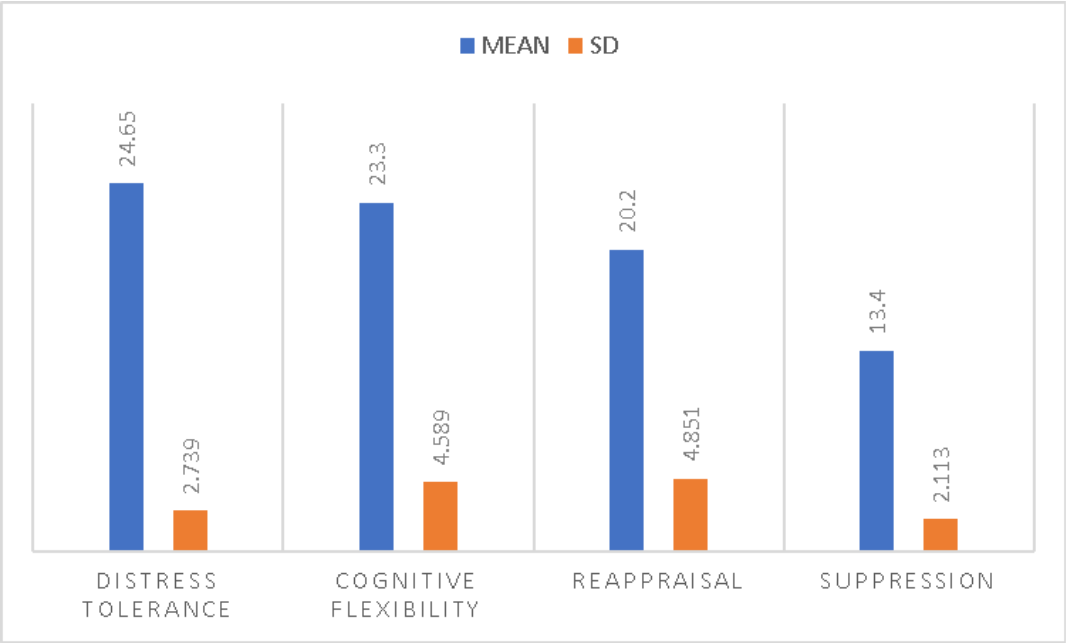
Here as per the above table we can see, distress tolerance has highest mean value (24.65); followed by cognitive flexibility (23.30), reappraisal (20.20) and suppression (13.40).

As the mean value provide a quick overview of the typical value within the data, we can safely say that the 20 individuals experiencing emotional abuse, have given higher score in distress tolerance questionnaire as compared to other. Which eventually indicates that emotional abuse has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.

As we know that distress tolerance is the ability to overcome emotional distress, including aversive feelings and thoughts; so here highest mean value in distress tolerance suggests that emotional abuse has increased the subject's ability and tolerance level to understand and cope up with any kind of stressful situation.

As the mean value of cognitive flexibility follows the mean value of distress tolerance, we can imply that although they face some difficulty in adapting their thinking and behavior to changing situations, although they finally tend to overcome it.

In term of emotion regulation of the 20 subjects, which we are measuring in the basis of reappraisal and suppression; we can see that the mean value of reappraisal is greater than suppression. It implies that individuals having emotional abuse during childhood, involves in changing the way they perceive a situation to alter its emotional impact rather than suppressing it.



Above is the bar graph representing the mean value and SD of the 20 data having emotional abuse.

Table 5: The mean value of 20 individuals experiencing emotional neglect, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression).

	N	Mean	Std. deviation	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Std. error	Statistics	Std. error
Distress tolerance	20	23.60	3.789	-.726	.512	2.235	.992
Cognitive flexibility	20	22.55	4.651	.985	.512	2.553	.992
Reappraisal	20	18.50	4.110	.490	.512	-1.007	.992
Suppression	20	11.00	3.261	-2.024	.512	4.689	.992

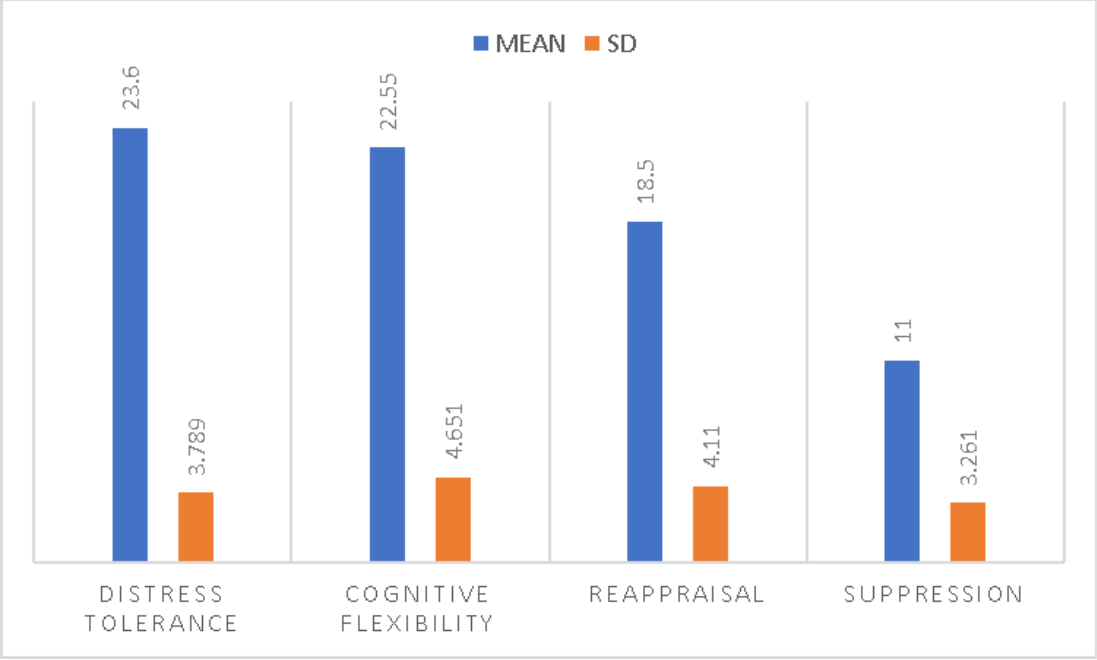
Here as per the above table we can see, distress tolerance has highest mean value (23.60); followed by cognitive flexibility (22.55), reappraisal (18.50) and suppression (11.00).

As the mean value provide a quick overview of the typical value within the data, we can safely say that the 20 individuals experiencing emotional neglect, have given higher score in distress tolerance questionnaire as compared to other. Which eventually indicates that emotional neglect has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.

As we know that distress tolerance is the ability to overcome emotional distress, including aversive feelings and thoughts; so here highest mean value in distress tolerance suggests that emotional neglect has increased the subject's ability and tolerance level to understand and cope up with any kind of stressful situation.

As the mean value of cognitive flexibility follows the mean value of distress tolerance, we can imply that although they face some difficulty in adapting their thinking and behavior to changing situations, although they finally tend to overcome it.

In term of emotion regulation of the 20 subjects, which we are measuring in the basis of reappraisal and suppression; we can see that the mean value of reappraisal is greater than suppression. It implies that individuals having emotional neglect during childhood, involves in changing the way they perceive a situation to alter its emotional impact rather than suppressing it.



Above is the bar graph representing the mean value and SD of the 20 data having emotional neglect.

Table 6: The mean value of 20 individuals experiencing sexual abuse, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression).

	N	Mean	Std. deviation	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Std. error	Statistics	Std. error
Distress tolerance	20	25.85	3.376	-.148	.512	-1.118	.992
Cognitive flexibility	20	24.00	4.984	.385	.512	-1.226	.992
Reappraisal	20	20.70	5.322	1.270	.512	2.057	.992
Suppression	20	12.80	3.156	.550	.512	4.545	.992

Here as per the above table we can see, distress tolerance has highest mean value (25.85); followed by cognitive flexibility (24.00), reappraisal (20.70) and suppression (12.80).

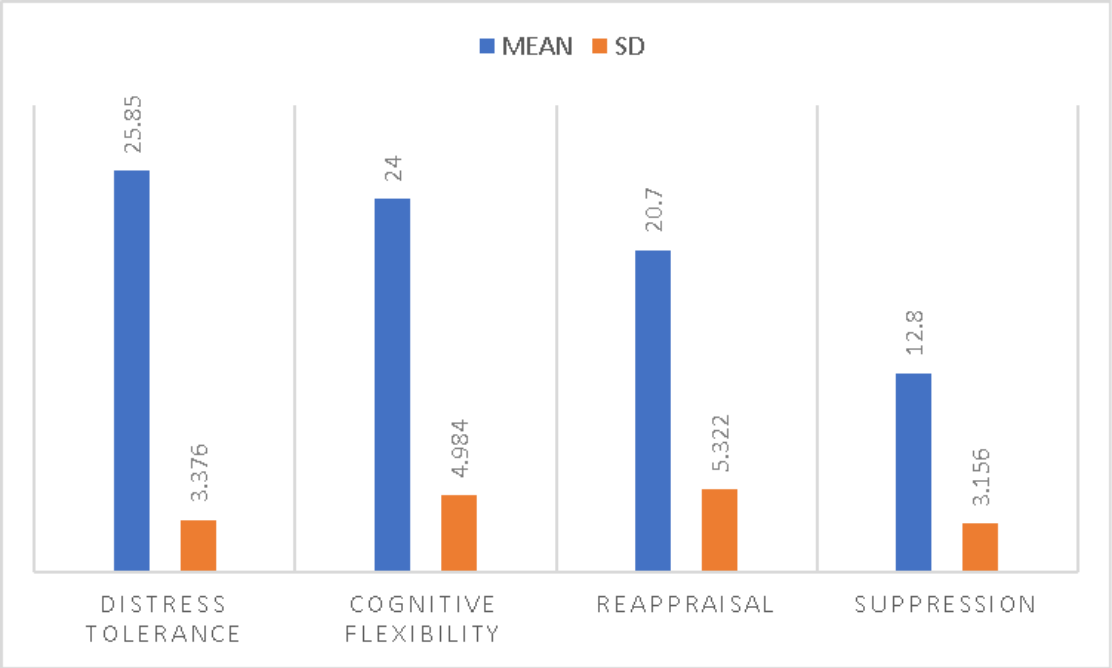
As the mean value provide a quick overview of the typical value within the data, we can safely say that the 20 individuals experiencing sexual abuse, have given higher score in distress tolerance questionnaire as compared to other. Which eventually indicates that sexual abuse has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.

As we know that distress tolerance is the ability to overcome emotional distress, including aversive feelings and thoughts; so here highest mean value in distress tolerance suggests that sexual abuse has increased the subject's ability and tolerance level to understand and cope up with any kind of stressful situation.

As the mean value of cognitive flexibility follows the mean value of distress tolerance, we can imply that although they face some difficulty in adapting their thinking and behavior to changing situations, although they finally tend to overcome it.

In term of emotion regulation of the 20 subjects, which we are measuring in the basis of reappraisal and suppression; we can see that the mean value of reappraisal is greater than

suppression. It implies that individuals having sexual abuse during childhood, involves in changing the way they perceive a situation to alter its emotional impact rather than suppressing it.



Above is the bar graph representing the mean value and SD of the 20 data having sexual abuse.

Table 7: Effect of adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on distress tolerance, cognitive flexibility, emotion regulation (reappraisal and suppression).

Shows the Kruskal Wallis test of control group: childhood trauma (physical neglect, emotional abuse, emotional neglect, sexual abuse) of 80 individuals on the basis of distress tolerance, cognitive flexibility and emotion regulation (reappraisal, suppression)

	Distress tolerance	**Cognitive flexibility**	**Reappraisal**	**Suppression**
Chi-square	7.972	1.739	13.756	11.418
df	3	3	3	3
Asymp. Sig.	.047*	.628	.003**	.010**

P* >0.05 level of significance

P**>0.01 level of significance

In the above table the p value of distress tolerance is 0.047, cognitive flexibility is 0.628, reappraisal is 0.003 and suppression is 0.010.

The p values of distress tolerance 0.047 is smaller than 0.05 level of significance. Therefore, we can say that adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) have some effect on distress tolerance. **Hence the null hypothesis 1 is rejected.**

The p value of cognitive flexibility 0.628 is greater than 0.05 level of significance. Therefore, we can say that adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) have no effect on cognitive flexibility. **Hence, we cannot reject the null hypothesis 2.**

The p value of reappraisal 0.003 is smaller than 0.05 level of significance. Therefore, we can say that adverse significant childhood experience (physical neglect, emotional abuse,

emotional neglect, sexual abuse) have some effect on reappraisal. **Hence the null hypothesis 3 is rejected**.

The p value of suppression 0.010 is smaller than 0.05 level of significance. Therefore, we can say that adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) have some effect on suppression. **Hence the null hypothesis 4 is rejected**.

Mean rank table:

Childhood trauma		**N**	**Mean rank**
Distress tolerance	Physical neglect	20	31.45
	Emotional abuse	20	43.58
	Emotional neglect	20	36.30
	Sexual abuse	20	50.68
Cognitive flexibility	Physical neglect	20	36.15
	Emotional abuse	20	43.35
	Emotional neglect	20	38.22
	Sexual abuse	20	44.28
Reappraisal	Physical neglect	20	25.20
	Emotional abuse	20	47.50
	Emotional neglect	20	39.65
	Sexual abuse	20	49.65
Suppression	Physical neglect	20	31.45
	Emotional abuse	20	51.90
	Emotional neglect	20	32.80
	Sexual abuse	20	45.85

Above table shows the effect of adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on distress tolerance, cognitive flexibility, emotion regulation (reappraisal and suppression) through mean rank distribution. From the table we can see that individuals suffering from abuse (both emotional and sexual) have a higher tolerance of distress, they tend to think and adapt to any situation much flexibly than individuals suffering from neglect (physical or emotional).

In case of regulating their emotions, the individuals suffering from sexual abuse try to identify and modify their thoughts and perception of a situation to alter its emotional impact; they tend to use reappraisal. Maybe it is because they have gone through so much negativity, with the help of therapy or professional help they are trying to improve their cognition and thought process. On the other hand, individuals having emotional abuse in childhood tend to suppress their emotions rather than expressing it or reapproaching the situation. They try to hide the outward display of their feelings, maybe because of the abuse they have gone through in childhood.

DISCUSSION

This research is conducted to explore the effect of some significant childhood adverse experience on distress tolerance, cognitive flexibility and emotion regulation among young adults. The main inclusion criteria for this research were, individuals of age range 18-35, must be citizen of West Bengal, having minimum education qualification of higher secondary and must have any significant adverse childhood experience. Individuals having any chronic mental or physical illness was excluded from this study. Total 115 samples were collected using Purposive sampling.80 samples were selected between those 115 samples for the current research. As the inclusion criteria requirement, by using Childhood Trauma Questionnaire–Short Form (CTQ-SF) by Bernstein D., Fink L. 1998 few data were discarded as there were no significant adverse childhood experience. Few data were discarded using the General health questionnaire (GHQ-28) by Goldberg and Hiller (1979) as their scores were above 5. Among these 115 samples; 20 has physical neglect, 20 has emotional abuse, 20 has emotional neglect and 20 has sexual abuse history.

At first, the Shapiro wilk test of the total data was done to see if the data is normally distributed. From **table 1**., we can see that 6 out of 16 data are normally distributed as the p-value is greater than significance level 0.05. hence, we can say, some of the data are normally distributed and some are not. Although the total number of samples is 80 but it is divided into 4 groups each having 20 sample; hence we have a small sample size. Therefore, we are doing the nonparametric statistics: Kruskal Wallis test.

One study by Viana et al (2018) suggested that, difficulties in emotional clarity was associated at low level with distress tolerance in childhood trauma survivors. In **table 2**., the mean of all the 80 data having adverse childhood experience with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression) is being discussed; where distress tolerance has highest mean value (24.31); followed by cognitive flexibility (22.96), reappraisal (18.75) and suppression (12.19). As the mean value provide a quick overview of the typical value within the data, we can safely say that the 80 individuals having some significant childhood adverse experience, have given higher score in distress tolerance questionnaire as compared to other. Which eventually indicates that childhood trauma has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation. Which can happen due to many reasons. These individuals may have developed strong coping strategies over time, maybe out of necessity. Growing up in environments where emotional support was lacking might have forced them to learn how to regulate emotions internally or become desensitized to distress, in which case high distress tolerance could reflect

emotional resilience. The higher score in reappraisal (18.75), than suppression (12.19) also suggests the same. High distress tolerance could also mean that they have learned to get disconnect from the emotions, which can sometimes look like tolerance, but it might actually be emotional avoidance or numbing, which is common in trauma survivors.

Berenz, E. C. et al. (2018) suggested that distress tolerance may be differentially affected by various types of childhood trauma.

In **table 3**., the mean value of 20 individuals having physical neglect, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression) is being discussed; where distress tolerance has highest mean value (23.15); followed by cognitive flexibility (22.00), reappraisal (15.60) and suppression (11.55). Higher distress tolerance in individuals with distress tolerance can reflect both adaptive and maladaptive response. Physical neglect means basic needs were unmet in their childhood, so these individuals might have learned to solely rely on themselves from a very early hour of life. As a result, they might have become extremely independent and tolerance of discomfort or stress, simply because they have no choice. They might also not react to distress because they are managing it well, but they have learned to ignore or minimize it. It can also signal learned helplessness, an individual who were physically neglected in childhood often internalized that asking for help does not work.

In **table 4**., the mean value of 20 individuals experiencing emotional abuse, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression) is being discussed; where, distress tolerance has highest mean value (24.65); followed by cognitive flexibility (23.30), reappraisal (20.20) and suppression (13.40). Emotional abuse in childhood often involves constant criticism, rejection or humiliation from caregiver or authority figures. Over time, the child may adapt by becoming emotionally desensitized or learning to shut down feelings. In adulthood, this may show up as high distress tolerance, as if they can handle a lot of emotional discomfort, but possibly at the cost of feeling disconnected from those emotions. Emotional abuse often teaches the child not to rely on others, which in adulthood might look like high distress tolerance, masking the relationship difficulties or mistrust.

In **table 5**., the mean value of 20 individuals experiencing emotional neglect, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression) is being discussed; where, distress tolerance has highest mean value (23.60); followed by

cognitive flexibility (22.55), reappraisal (18.50) and suppression (11.00). Emotional neglect in childhood is manifested by absence of emotional support, which can be caregivers being emotionally unavailable, not being comforted or validated as a child, or growing up feeling unseen, unheard or as if emotions does not matter. Their distress tolerance may reflect self-reliance, but also a belief that emotions aren't safe or something to be welcomed. emotional neglect can impair interoception or awareness of internal states, people may underestimate their own distress. They might not realize they are stressed until it become physical and manifested as headaches or any kind of somatic symptoms.

In **table 6**., the mean value of 20 individuals experiencing sexual abuse, with respect to distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression) is being discussed; where, distress tolerance has highest mean value (25.85); followed by cognitive flexibility (24.00), reappraisal (20.70) and suppression (12.80). Sexual abuse in childhood is a deeply violating and disempowering experience. Many survivors develop a form of psychological endurance, learning to get detached to survive overwhelming situations, overtime which can look like high distress tolerance. Survivors may appear calm or unaffected during distress, but it could be because they're disconnected from their emotional and bodily states. Sometimes, they struggle to trust others, especially in emotionally vulnerable situations.

Although, irrespective of any kind of adverse childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) we can see that individuals have chosen reappraisal as emotion regulation strategy in place of suppression. As we know, reappraisal involves changing how one thinks about a stressful event to alter its emotional impact, it reflects post-traumatic growth and psychological resilience. Also, trauma survivors may use reappraisal as a way to stay in control or to manage pain cognitively rather than feeling it emotionally. One study by Hopfinger, L. et al. (2016) support to the idea that effective emotion regulation might aid in preventing the onset or negative progression of depression in those who have faced childhood trauma.

In **table 7**., the effect of adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) on distress tolerance, cognitive flexibility, emotion regulation (reappraisal and suppression) is being discussed.

As childhood neglect (physical neglect and emotional neglect) and childhood abuse (emotional abuse and sexual abuse) are two different degrees of trauma, hence, the effect of these two are different on distress tolerance and cognitive flexibility.

From the mean rank table, we can see that, in individuals who have suffered from sexual and emotional abuse in childhood have a higher distress tolerance and cognitive flexibility, in respect to other childhood trauma (physical neglect, motional neglect). It may imply that individual have built resilience in their thought. They have faced and process the trauma rather than avoiding it. They have developed both the ability to endure distress and the capacity to adapt, reframe, and shift perspective. Also built an internal system that can feel pain without shutting down, and respond flexibly to challenges. It also indicates post traumatic growth, a phenomenon where individuals grow psychologically after trauma, developing deeper insight, empathy, and psychological strength. Cognitive flexibility has allowed them to reframe negative belief, generate multiple coping skills and adaptively process triggers. One study by Chen, S. E. et al (2024) suggested that cognitive flexibility has acted as a protective element against self-harming tendencies in trauma survivors, which eventually proves the higher distress tolerance. Study by Caldwell, J. G et al (2014) also emphasized on the extensive consequences of childhood abuse on cognitive-emotional flexibility.

It is also seen that individuals who had neglect (both physical and emotional) in childhood have relatively lower distress tolerance and cognitive flexibility. Physical neglect includes failure to provide food clothing, shelter or any other essentials that keeps a child safe and healthy, on the other hand emotional neglect includes, lack of love, affection or comfort that helps the child feel the world around them a safe place. Both the neglects together create a context where the child never learns how to regulate internal distress or to feel safe enough to explore and adapt. The individual becomes overwhelmed easily and struggles to manage emotional discomfort, lacking both the emotional tools and the mental flexibility to cope effectively. They also might get stuck in negative thought loops, have trouble adjusting to change, and rely on rigid coping mechanisms like avoidance or black-and-white thinking. One study by Odacı, H. et al (2021) has suggested that there is a mediating influence of cognitive flexibility between adverse childhood experience and substance abuse tendency which is an unhealthy coping against stressful situations. Another study by Torkaman, M et al. (2023) also suggested cognitive flexibility serve as mediators in the relationship between childhood trauma and drug abuse tendency.

In case of emotion regulation, here in this research it is measured in term of reappraisal and suppression. We can see that individuals who have suffered from childhood sexual abuse have a higher score in reappraisal. In reappraisal an individual generally changes the way they think about a situation in order to alter their thought process and overcome the situation. In general,

reappraisal is considered healthy and adaptive, especially compared to suppression or avoidance. The use of reappraisal may reflect an ability to process the trauma, gain perspective, and regulate emotions in a constructive way. May be these individuals have faced so much negativity in childhood they have adapt to a totally new perspective to protect their mental peace. One study by Hébert, M. et al (2018) suggests that to effectively address behavioural problems in sexually abused youth, clinical interventions must focus on improving emotion regulation skills. Although, if reappraisal is used rigidly or in place of emotional connection, it may suppress real healing. So, we also need to make sure that this individual gets proper professional help in their journey.

According to a study conducted by Burns et al (2010), emotional abuse emerged as the most significant predictor of difficulties in emotion regulation. Here in this study, we can see that individuals with emotional abuse have mostly chosen suppression as their emotion regulation strategy. Emotional abuse often teaches children that their feelings are invalid, dangerous, or shameful. As a result, they learn to hide or suppress emotions to avoid punishment, rejection, or humiliation. Individuals may appear composed, strong, but internally feel anxious, ashamed, or insecure which might block healing, intimacy, and emotional freedom. Suppression might help short-term, but it exacts a long-term cost on mental and physical health. One study by Gruhn, M. A. et al (2020) suggest that maltreatment is generally linked to inadequate emotion regulation, as well as a tendency towards avoidance, emotional suppression, and the expression of negative emotions when faced with stress.

As per the test statistics table, the p value of distress tolerance is 0.047, cognitive flexibility is 0.628, reappraisal is 0.003 and suppression is 0.010. As the p value of distress tolerance (0.047), p value of reappraisal (0.003) and p value of suppression (0.010) is smaller than 0.05 level of significance, therefore, we can say that adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) have some effect on distress tolerance, reappraisal and suppression. Although, as the p value of cognitive flexibility (0.628) is greater than 0.05 level of significance, we cannot say that adverse significant childhood experience (physical neglect, emotional abuse, emotional neglect, sexual abuse) have some effect on cognitive flexibility.

CONCLUSIONS

This study was conducted to explore the effect of some significant childhood adverse experience on distress tolerance, cognitive flexibility and emotion regulation (reappraisal and suppression) among adults. From the finding **we can conclude that there is some effect of some significant childhood adverse experience (physical neglect, emotional neglect, emotional abuse, sexual abuse) on distress tolerance and emotion regulation (reappraisal and suppression).**

The investigation eventually led to the following conclusions.

1. Individuals having some significant childhood adverse experience (physical neglect, emotional neglect, emotional abuse, sexual abuse), have higher score in distress tolerance as compared to other. Which eventually indicates that childhood trauma has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.
2. Individuals experiencing physical neglect, have higher score in distress tolerance as compared to other. Which eventually indicates that physical neglect has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.
3. Individuals experiencing emotional abuse, have higher score in distress tolerance as compared to other. Which eventually indicates that emotional abuse has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.
4. Individuals experiencing emotional neglect, have higher score in distress tolerance as compared to other. Which eventually indicates that emotional neglect has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.
5. Individuals experiencing sexual abuse, have higher score in distress tolerance as compared to other. Which eventually indicates that sexual abuse has much less effect on distress tolerance as compared to cognitive flexibility and emotion regulation.
6. Individuals suffering from abuse (both emotional and sexual) have a higher tolerance of distress, they tend to think and adapt to any situation much flexibly than individuals suffering from neglect (physical or emotional).
7. Individuals having emotional abuse in childhood tend to suppress their emotions rather than expressing it or reapproaching the situation. They try to hide the outward display of their feelings.

LIMITATIONS OF THE STUDY:

This study has few limitations. They are-

1. The sample for the present research is relatively small mainly due to time constrains so the findings are difficult to generalized.
2. Study based on gender difference could have added more significance to the research.
3. Biasness due to self-administration cannot be controlled.

APPLICABILITY OF THE PRESENT STUDY:

Many researchers have focused on different aspects that are affected by adverse childhood experiences, but not many have focused on the cognitive and emotional disturbances that individual faces. As we know that cognition and emotions are two main pillars of how one's behaviour is going to be, so we need to focus on it. This current study mainly focuses on these two aspects of human behaviour. Having adverse childhood experience can make an individual prone to several mental health disorders like PTSD, anxiety, depression. They can also develop self-hate, low self-esteem which can also lead to self-harming tendencies. If we focus on how these individuals manage their stress situations, how flexible they are in terms of thinking, or how well they manage their thoughts and emotions; then professionals can easily come up with techniques that are specially designed to help these individuals. Although there are therapies available such as Prolonged exposure therapy, Trauma focused cognitive behavioural therapy (TF-CBT), but knowing their cognition and emotion well, these techniques can be more individualized, which is eventually going to help the individual even more.

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APPENDICES

APPENDIX A:

CONSENT FORM:

Dear participants,

I am Riddhi Chatterjee, a student of M.Sc. applied psychology (clinical specialization), semester 4, Sister Nivedita University.

I am conducting small-scale research for my maser's dissertation on exploring emotion regulation, distress tolerance and cognitive flexibility among adults with some significant childhood adverse experiences.

For the research, I will need adults as participant. I request to you for your valuable help in my dissertation work.

This study poses no risk to its participants. Your data will remain confidential and will be strictly used for research purposes. No one will be able to see your answer or even whether you participated in this study. Study findings will be presented only in summary form and your name would not be used in any report.

Your honest participation will help in making this research fruitful. Contact me in case of any doubt.

e-mail: chriddhis@gmail.com

phone no.: 6290525863

Signature of the participant:

Date:

Signature of the researcher:

Date:

INFORMATION SCHEDULE:

NAME (Initial only):

Age:

Sex:

- Female
- Male
- Prefer not to say

Education qualification:

- Higher secondary
- Graduate
- Post graduate
- Others

Relationship status:

- Single
- Casual dating
- Committed relationship
- Married

History of any neurological disease or illness:

- Yes
- No

IF YES PLEASE SPECIFY

Presence of any diagnosed psychological illness:

- Yes
- No

IF YES PLEASE SPECIFY

Presence of any significant negative or adverse childhood experience:

- Yes
- No

(IF YES, KINDLY BRIEFLY EXPLAIN THE SIGNIFICANT EVENT)

IF YOU FEEL ANY KIND OF DISTRESS WHILE WRITING OR REMEMBERING THE EVENT PLEASE FEEL FREE TO CONTACT ME!

APPENDIX B:

We should like to know if you have had any medical complaints and how your health has been in general, over the past few weeks. Please answer ALL the questions on the following pages simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past. It is important that you try to answer ALL the questions. Thank you very much for your co-operation.

Questions	Better than usual	Same as usual	Worse than usual	Much worse than usual
Been feeling perfectly well and in good health?				
	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling in need of a good tonic?				
Been feeling run down and out of sorts?				
Felt that you are ill?				
Been getting any pains in your head?				
Been getting a feeling of tightness or pressure in your head?				

Been having hot or cold spells?				
Lost much sleep over worry?				
Had difficulty in staying asleep more once you are off?				
Felt constantly under strain?				
Been getting edgy and bad-tempered?				
Been getting scared or panicky for no good reason?				
Found everything getting on top of you?				
Been feeling nervous and strung-up all the time?				
Been managing to keep yourself busy and occupied?	More so than usual	Same as usual	Rather less than usual	Much less than usual
Been taking longer over the things you do?	Quicker than usual	Same as usual	Longer than usual	Much longer than usual

Felt on the whole you were doing things well?	Better than usual	About the same	Less well than usual	Much less well
Been satisfied with the way you've carried out your task?	More satisfied	About same as usual	Less satisfied than usual	Much less satisfied
Felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
	Not at all	No more than usual	Rather more than usual	Much more than usual
Been thinking of yourself as a worthless person?				
Felt that life is entirely hopeless?				
Felt that life isn't worth living?	Not at all	No more than usual	Less useful than usual	Much more than usual

Thought of the possibility that you might make away with yourself?	Definitely not	I don t think so	Has crossed my mind	Definitely have
	Not at all	No more than usual	Rather more than usual	Much more than usual
Found at times you couldn't do anything because your nerves were too bad?				
Found yourself wishing you were dead and away from it all?				
Found that the idea of taking your own life kept coming into your mind?	Definitely not	I don't think so	Has crossed my mind	Definitely has

APPENDIX C:

Instructions: Please rate yourself based on the options below in relation to the following possible traumatic experiences that you may have experienced. Take your time and be honest with your answers. This will be kept confidential.

Item	Never true	Rarely true	Sometimes true	Often true	Very often true
I did not have enough to eat					
I had someone to take care of me and protect me.					
I have been called "stupid", "lazy", and/or "ugly".					
My parents were too drunk/high to take care of me.					
Someone helped me feel important.					
I had to wear dirty clothes.					

I felt loved.					
I felt/thought that my parents wished I had never been born.					
I got hit so hard that I had to see a doctor.					
There is nothing I want to change in my family.					
I have been hit so hard that it left bruises and marks.					
I was punished with a belt, board, cord or another hard object.					
My family looked out for each other.					
My family said hurtful					

or insulting things to me.					
I was physically abused.					
I had a perfect childhood.					
I got hit badly and it was noticed by a teacher, neighbour, and/or doctor.					
Someone in my family hated me.					
My family felt close to each other.					
Someone tried to touch me in a sexual way or tried to make me touch them.					
Someone threatened to hurt me unless I did something					

sexual with them.					
I have the best family in the world.					
Someone made me try to do sexual things/watch sexual things.					
Someone molested me.					
I was emotionally abused.					
Someone took me to see the doctor when I needed to/if I needed to.					
I was sexually abused.					
My family gave me strength and support.					

APPENDIX D:

Instructions: Think of times when you feel distressed or upset. Select between the available options that best describes your beliefs about feeling angry, distressed or angry.

Item	Strongly agree	Mildly agree	Equality	Mildly disagree	Strongly disagree
Feeling distressed or upset is unbearable to me.					
When I feel distressed or upset, all I can think about is how bad I feel.					
I can't handle feeling distressed or upset.					
My feelings of distress are so intense that they completely take over					
There is nothing worse than feeling					

distressed or upset.					
I can tolerate being distressed or being upset as well as most people.					
My feelings of distress or being upset are not acceptable.					
I'll do anything to avoid feeling distressed or upset.					
Other people seem to be able to tolerate feeling distressed or upset better than I can.					
Being distressed or upset is always a major ordeal for me.					

I am ashamed of myself when I feel distressed or upset.					
My feelings of distress or being upset scare me.					
I'll do anything to stop feeling distressed or upset.					
When I feel distressed or upset, I must do something about it immediately.					
When I feel distress or upset, I can't help but focus on how bad the distress feels.					

APPENDIX E:

The following statements deals with your belief and feeling about your own behaviour. Read each statement and write the number that best represent your agreement with each statement.

Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree
6	5	4	3	2	1

1. I can communicate an idea in many different ways.
2. I avoid new and unusual situations.
3. I feel like I never get to make decisions.
4. I can find workable solutions of seemingly unsolvable problems.
5. I seldom have choices on deciding how to behave.
6. I am willing to work at creative solutions to problem.
7. In any given situation, I am able to act appropriately.
8. My behaviour is a result of conscious decisions that I make.
9. I have many possible ways of behaving in any given situation.
10. I have difficulty using my knowledge on a given topic in real life situation.
11. I am willing to listen and consider alternatives for handling a problem.
12. I have the self-confidence necessary to try different ways of behaving.